

THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation
INCORPORATING

Railway Engineer • TRANSPORT • The Railway News
The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.
RAILWAYS • ESTABLISHED 1835 • THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY

AT

38, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRALETTE PARL., LONDON"

Telephone No.: WHITENALL 9233 (6 lines)

Annual subscription payable in advance and postage free:

British Isles and Abroad.....£2 5s. 0d.

Single Copies.....One Shilling

Registered at the General Post Office, London, as a Newspaper

VOL. 65. No. 25

FRIDAY, DECEMBER 18, 1936

CONTENTS

	PAGE
Editorials	1011
Letters to the Editor	1016
Publications Received	1017
The Scrap Heap	1018
Overseas Railway Affairs	1019
Road Transport Section	1021
Organisation of a Railway Company's Road Motor-Engineer's Department	1023
Reichsbahn Road Services Replace Light Railways.. .. .	1026
Pickfords Heavy Haulage Department	1029
Railway News Section	1038

The King

IT is customary to consider the commercial development of this country as a series of epochs, each represented by the span of reign of the Sovereign, and on this basis the shortest epoch since the dawn of the industrial era ended on Friday last when the Royal Assent to the Declaration of Abdication Act closed the reign of King Edward VIII. Although its duration was less than eleven months, this period was not without significance in, and to, the world of transport, and it is worthy of recall that King Edward's last public appearance about the country—his visit to the South Wales depressed area—was made with a G.W.R. train as his headquarters. He it was who gave the title "The Royal Road" to the G.W.R., when, as Prince of Wales, he spoke at the company's centenary banquet last year, and it is a striking coincidence that this railway should have served his last public royal journey. Noteworthy also is the fact that the last ordinary legislative enactment to receive the Royal Assent as an Act of Edward VIII was the Railway Freight Rebates Act. King Edward will be remembered, we hope, not only by the use of his name on Parliamentary enactments, and not by such "history book" details as the shortness of his reign and its unusual close, but by recognition of his strong individualistic efforts towards the relief of industrial distress and abolition of unnecessary poverty. May the reign, as George VI, of his brother, the Duke of York, see the fruition of these laudable desires of our former King.

Royal Trains

The Great Western Railway was the first railway company in Great Britain to enjoy the patronage of the reigning monarch, and though the neighbouring London & South Western, on the strength of serving the Isle of Wight and Osborne, styled itself "The Royal Road," the Great Western might well have done likewise. As in the case of the London & North Western, the Great Western royal train, by reason of the Queen's conservatism, remained immune from modern improvements. In 1897, however, the company was allowed to build a new one, on condition that it made no alterations to the saloon used by the Queen herself. In spite of the odd coach in the middle, the new Great Western royal train was a very great improvement on the old one. With the passing of Victoria, one of the newer saloons was altered for the King's own personal use. In this form, the train was used successively by King Edward VII and King George V on various occasions, and as recently as 1925, hauled by the engine *Windsor Castle*, it was the subject of much admiration in the Railway Centenary Procession at Darlington. Thereafter, however, it passed under the cloud of old age, a cloud which seldom lifts where railway rolling stock is concerned. Since then, both the L.M.S.R. and L.N.E.R. royal trains have been used on the G.W.R., and on his recent visit to South Wales King Edward VIII travelled and lived in ordinary standard Great Western vehicles. At least one G.W.R. royal coach is now doing duty as a bungalow. So today, only the royal trains of the London & North Western, the South Eastern & Chatham, and the East Coast companies still remain in service as such. *Tempora mutantur, currus Regis mutantur in illis.*

* * * *

The Week's Traffics

A shortage of £46,000 in coal traffics is entirely responsible for the fall of £3,000 in the total receipts of the four group companies for the past week, but it should be remembered that in the corresponding week of 1935 there was a total increase of £42,000 in this class of traffic. The increase of only £1,000 in the L.M.S.R. merchandise receipts for the past week compares with a gain of £32,000 in the 50th week of 1935. Percentage increases for the year to date in merchandise receipts are L.M.S.R. 5.65, L.N.E.R. 3.33, and Great Western 4.41. Corresponding percentage advances in passenger train traffics are L.M.S.R. 2.57, L.N.E.R. 2.08, Great Western 2.16, and Southern 2.13. For all companies together the aggregate increase to date is £4,515,000, or 3.10 per cent.

	50th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R.	- 2,000	+ 1,000	- 15,000	- 16,000	+ 2,217,000	+ 3.83
L.N.E.R.	+ 4,000	+ 12,000	- 21,000	- 5,000	+ 1,226,000	+ 2.86
G.W.R.	+ 3,000	+ 14,000	- 7,000	+ 10,000	+ 637,000	+ 2.60
S.R.	+ 7,000	+ 4,000	- 3,000	+ 8,000	+ 405,000	+ 2.07

On the Great Northern Railway (Ireland) the week's traffic shows a decrease of £300.

* * * *

What the Trader Wants

Mr. W. H. Gaunt in his paper on "Transport from an Operating Trader's View Point," read to the Institute of Transport last Monday, referred to a remark made by Mr. H. W. Payne, at the summer congress of the institute, that "the railways only wish to know what the trader wants." Mr. Gaunt was clear on what he, as a very considerable trader, wants. He desires, first of all greater reliability, but whether the railways can, now that they know this, at once proceed to supply it, is doubtful. For one thing they are up against that endemic trouble

of great organisations to which Mr. Gaunt referred, namely, unexpected labour difficulties. Mr. Gaunt also specified certain things that traders desire from other transport media, such as the prompt strengthening of weak road bridges that restrict the usefulness of heavy road vehicles, and the construction of new roads so that there may be an end to congestion in towns—not unreasonable demands these, nor impossible to achieve. Mr. Gaunt's significant reference to defence requirements conjures up a picture of all sorts of desirable things being done without delay as soon as a state of emergency should arise, and one is tempted to ask why such things should not be undertaken before disaster looms upon the horizon to galvanise us into action. Considering Mr. Gaunt's specific requirements, for example, all the real necessities—labour, skill, materials, and equipment—already exist to fulfil them. The reasons generally given, and unfortunately accepted, for not doing these desirable and possible things forthwith, are not good reasons because they are not based on reality.

* * *

Overseas Railway Traffics

There has been a general advance in the gross earnings of Argentine railways during the past fortnight except on the Buenos Ayres Western which has no doubt been affected in the past week by conditions special to the districts served by it. The Central Argentine again takes the lead with an increase of £70,068 in the two weeks; the Cordoba Central is up £12,150 in the same period, the Buenos Ayres & Pacific has a gain of £7,684, and the increases by the Argentine North Eastern and the Entre Rios are respectively £2,250 and £4,331.

	No. of Weekly Week Traffics	Inc. or Decrease £	Aggregate Traffic £	Inc. or Decrease £
Buenos Ayres & Pacific ..	24th 87,672	+ 5,063	1,825,601	+ 44,478
Buenos Ayres Great Southern ..	24th 129,324	- 2,110	2,716,250	+ 134,969
Buenos Ayres Western ..	24th 44,704	- 8,057	992,759	+ 18,637
Central Argentine ..	24th 148,051	+ 31,670	3,308,337	+ 512,849
Canadian Pacific ..	49th 561,200	+ 2,600	25,823,200	+ 1,645,000
Bombay, Baroda & Central India	36th 270,900	+ 35,775	5,653,575	+ 182,250

On the Canadian Pacific there has been a set-back of £16,000 in gross earnings during the past fortnight, because of a decrease of £18,600 in the 48th week.

* * *

The London-Aberdeen Travelling Post Office

In our issue of December 11 we refer to a fascinating paper recently presented to the Railway Students' Association by Mr. J. J. C. Rowden, Chief Superintendent, Travelling Post Offices, G.P.O. We then gave an abstract of his general exposition of the T.P.O. Service and commented on the amicable relationship existing between the G.P.O. and the various British main-line railway companies in the provision of these important facilities. This week we give on page 1040 an abstract of the second part of Mr. Rowden's paper, in which he dealt in detail with the Down Special T.P.O. (London to Aberdeen), one of the largest T.P.O. trains in the world. Both this, and its counterpart, the Up Special T.P.O., are run specially for the Post Office, and are devoted solely to Post Office business. The Down Special deals with about $\frac{3}{4}$ million letters a week, or 40 million a year. It receives approximately 700 bags a day from roughly 230 offices, and despatches about 650 bags a day to 350 offices; that is, mails opened and made up in the T.P.O. as distinct from through mails not opened in the T.P.O. On every trip 68 pouches are despatched, and 52 pouches received, while the train is in motion. The Up Special T.P.O. handles an even larger mail than the Down Special, dealing with $1\frac{1}{4}$ million items a week or 65 million a year, and consists at the maximum of 16 vehicles against 13 on the Down Mail.

The "Postal's" Passengers

It is not without interest that, for a part of the daily journey in both directions, the London-Aberdeen Special T.P.O. service has ordinary passenger coaches attached. Over the section of its journey north of Stirling two postal vehicles only are needed, and at Stirling, therefore, these are joined by a train which has left Glasgow Central at 4.15 a.m., and which actually gives the fastest service of the day—3 hr. 37 min.—from Glasgow to Aberdeen, chiefly by reason of the non-stop run of the postal train over the 89½ miles from Perth to Aberdeen. In the south-bound direction it is only from Aberdeen to Perth that the "Postal" carries passengers, after which the passenger section runs independently to Glasgow. For many years, in old Caledonian days, to ensure strict timekeeping, it was permissible to attach only two passenger coaches going north and four going south, but by degrees, as locomotive power has increased, the maximum passenger complement has increased to a total of six coaches, added to the postal vehicles. On Sunday nights, when the Special T.P.O. carries a considerably smaller quantity of mail from Euston, the usefulness of the train is further increased by the incorporation with it over the 299 miles from London to Carlisle of the through sleeping car, passenger composite coach, and van for Stranraer Harbour. Belfast passengers thereby gain an hour on their journey, starting at 8.30 p.m. instead of at 7.30 p.m., with the Royal Highlander, as otherwise they would have to do. Nevertheless the "Postal" is not a very fast train, according to modern standards of speed, the aim being so to time it as to give ample margin for the recovery of time lost by abnormal causes.

* * *

Progress in Telegraph Engineering

Progress in telegraphy has been continuous since this subject was dealt with in a paper to the Institution of Electrical Engineers four years ago. A survey of recent telegraphic developments by Messrs. L. H. Harris, E. H. Jolley, and F. O. Morrell, read to the institution on November 19, stated that "by 1934 hardly an item of traditional telegraph plant remained in the inland service." Modern discoveries in electricity have opened up new possibilities in the transmission of signals, both telegraphic and telephonic, which have been eagerly adopted by engineers, with the result that the capacity of previously existing channels of communication has been multiplied beyond what would have been thought possible in the days of ordinary d.c. telegraphy. Printing telegraphs, now brought to a surprising degree of efficiency, have become standard but their performance has been markedly increased by the use of new principles in circuits, embodying voice frequency working and other highly technical refinements. By these means large numbers of messages can be sent simultaneously over one connecting link, liberating circuits for other purposes, such as trunk telephone work, for which the demand has risen. Overseas communications have also been improved, and in this connection the International Telegraphic Consultative Committee has played an important part.

* * *

Higher Speed in Germany

It is a matter of no little surprise that the high average speeds of certain Continental railways have been built up in face of maximum speed restrictions which have always been unknown in Great Britain until the recent recognition here of 90 m.p.h. as a maximum. But in France, except with the railcar services, 120 km. (74½ m.) p.h. not only has been, but still is, with one or two minor relaxations, enjoined by law as the maximum speed

for steam locomotives, the result being that only by exceptional uphill work have the engines of, say, the Nord Company been able to maintain their very fast schedules. In Germany, until now, save over certain important main lines particularly well suited to high speed, such as Berlin—Hamburg, Berlin—Hamm, and Berlin—Leipzig or Halle, the limit for steam trains has still remained at 100 km. (62 m.) p.h., but this is in future to be generally raised to 120 km.p.h., and wherever track conditions and the rolling stock in use permit, to the higher level of 135 km. (84 m.) p.h. and 160 km. (100 m.) p.h. for the high-speed diesels. Certain preparations are necessary for these changes, and when they have been made, a further general speed up of the "FD" and "D" steam train services will take place.

* * * *

Locomotive Efficiency

Of the several thermal losses going to make the formidable total which must, alas, always be associated with steam locomotive working, there is at least one which should be preventable, and that is the loss due to incomplete combustion. One does not today so often hear the pattering of solid fuel on carriage roofs, or perceive by night a falling shower of sparks, but evidence that solid fuel is still lost in locomotives is afforded by the results of tests on furnace efficiency which we describe elsewhere in this issue. A loss less evident to the senses results from the burning of carbon to carbon monoxide instead of to carbon dioxide, but this loss is not large except when the cooling effect produced by opening the firedoor is unduly prolonged. The experiments made to ascertain the various losses were particularly ingenious, and the difficulty of obtaining representative samples of exhaust gases complete with solid particles of fuel was anticipated, and the method of sampling was based on observations previously made through a small window let into the side of a locomotive smokebox. The heat lost by incomplete combustion of the hydrogen content of the coal averaged a tenth of one per cent. on a run between Crewe and Carlisle, and was thus shown to be an unimportant item in a grand total of 26.7 per cent. lost.

* * * *

Instruction in Welding

It is symptomatic of the progress of welding that the number of students enrolled for the welding course arranged by the Essex Education Committee in the new South East Essex Technical College at Dagenham has far exceeded expectations. It is designed for instruction in both electric-arc and oxy-acetylene welding in order that the students may gain an all-round efficiency. This arrangement also relieves the practical and economical difficulty of installing more than a limited number of arc welding machines, and provides alternative instructional apparatus for a larger number of students. The course includes practical exercises in welding in advancing stages, together with instruction in the control and care of the welding plant. Lectures are given in elementary metallurgy, the simple chemistry and electrical elements of the processes. The importance of adequate protection for the eyes and skin is emphasised.

* * * *

Safety of All-Steel Rolling Stock

A correspondent has sent us particulars of a remarkable example of the value of all-steel rolling stock in safeguarding the lives of passengers in railway accidents. It was provided by the derailment on March 26 of the Pennsylvania Railroad Company's train No. 36 from Pittsburgh to Philadelphia. This train consisted of two standard K4s Pacific locomotives and 13 cars, all of which

were of steel construction except the fourth, a refrigerator car belonging to an outside firm, which had a steel underframe with a wooden superstructure. The passenger complement was 81. At a point 23½ miles east of Pittsburgh, near Manor station, the train was travelling at 55-60 m.p.h. when an empty refrigerator car in the middle of a west-bound freight train of 101 cars on the adjacent track buckled, fouling the track of the express. Both locomotives were derailed and overturned and the first four cars were scattered over the line in the manner shown in our photograph on page 1033. The fifth, sixth, seventh and eighth cars remained upright but were derailed. Both enginemen, and the fireman of the second locomotive were killed, and the fireman of the first locomotive was seriously injured. Only two persons on the train were even slightly injured. Another picture we publish on page 1033 also shows up the value of all steel rolling stock in derailments. Our correspondent adds that, the incidence of accidents being outside the passenger's control, he appreciates having some guarantee as to the type and extent of the injury he may have to suffer.

* * * *

Improving Locomotive Performance

The endeavour to improve locomotive performance has been continuous ever since railways came into being, embracing not only the work actually done by the engines, but also the cost of operation and maintenance. Economy in fuel consumption has naturally been increasingly regarded as an ideal, and many and varied are the expedients tried to bring it about. Some, at least, of these have been rewarded by success, and of them all it can at least be said that they were praiseworthy efforts. Some seem to regard streamlining, if not essential to improve locomotive working, as one of the most likely aids to that end. Others, however, do not turn a favourable eye on the project, and say that the fundamentals on which the success of a locomotive depend are solely to be found in the design of the cylinders, piping, and clearances, the design of the boiler, the distribution of the heating surfaces, and other major points. These in any case are, however, of the first importance whether the engine is streamlined or not. The fact that where streamlining on scientific lines has been tried it has continued in use, indicates clearly that there is something more than whim in the idea, and the further investigation of the subject, with the aid of wind tunnel tests and other measures may, and we think will, prove in time beyond any doubt that with the other desirable features assured, just that bit more in the way of improved performance can be obtained by so fashioning the engine that wind resistance is reduced.

* * * *

They Have Not Failed Us

Some of the Christmas posters of London Transport a year ago had a touch of futurism which was liable to cause considerable dismay to any merry gentlemen returning home late after an evening of seasonable conviviality. The board's prescription for 1936, however, strikes us as better attuned to the needs of the honest, homespun minds that flourish below escalators, and we state with pride that the import of the principal posters in this year's display was borne in upon us after a single explanation. Even that time lag might have been saved had the billposting department not separated the moving appeal: "You must not fail them," from its complementary picture of a little child. "Fougasse" exhorts last-minute Christmas shoppers with some characteristic sketches to mend their ways. Since the same artist's rush-hour poster appeared a short time ago, we have been hoping the board's officials would commission more underground mirth, and are glad to see they have not failed us.

Cecil Paget

APART from the railway pioneers such as Stephenson, Brunel, Gooch, Pease, and Hudson, during the past hundred years there have arisen at least a score of stars in the railway firmament who have left their mark on British railway policy and development. Excluding those that have retired who are still among us, to cite a few examples we would mention such names as Allport, Watkin, Staats Forbes, Grierson, Tennant, Saxby, Sykes, Tyer, Scotter, Stroudley, Moon, Webb, Findlay, Wilkinson, Inglis, Gibb, Ivatt, and Churchward. Few will now dispute that no list such as this could be considered complete unless it included Sir Cecil Paget whose sudden death last week is recorded elsewhere in this issue. In fact his name is already so well remembered that it comes as a surprise to realise that already it is over 17 years since he retired from the position of General Superintendent of the former Midland Railway, at the too early age of 44. As in the case of Sir Henry Thornton, there are many who regret that some way was not found of utilising Sir Cecil Paget's abilities and original mind in the operation or management of one of the four group railways whose creation opened the new era of British railway history that started in January, 1923.

Both in peace and in war Paget distinguished himself. Early in the great war he was selected to form the Railway Operating Division and continued as its Commandant throughout. Both in civil railway work and military railway work, not sparing himself, he expected the same service from others; but he had the faculty of inspiring loyalty, and one might also say affection amongst his personal staff. This was amply evidenced each year at the re-union dinners of the R.O.D. which were the few occasions since his retirement that he appeared in public at a railway gathering. But his greatest work was accomplished prior to the war, in the entire reorganisation of the operation of the former Midland Railway and the institution of traffic control.

Trained as a mechanical engineer, he eventually became Locomotive Works Manager, and subsequently Assistant Locomotive Superintendent of the former Midland Railway. There his originality soon began to show itself by the invention and building of an experimental locomotive of the 2-6-2 type having eight single-acting cylinders each measuring 18 in. dia. by 12 in. stroke. These were fitted with trunk pistons and arranged in groups of four, the pistons on each side moving in opposite directions. Individual drive to each coupled axle was secured, thus adapting in a sense the principle of automobile practice to a steam locomotive and providing the advantage of virtually complete balancing. The boiler, however, was rather underpowered and the type was not proceeded with; although a very similar design of engine was subsequently built for an overseas railway.

Paget's great opportunity, however, came in 1907 when, under the reorganisation scheme instituted soon after Sir Guy Granet became General Manager in 1906, Cecil Paget was appointed General Superintendent covering all sections of traffic operation, including the control of locomotives and rolling stock in service and other sections associated with traffic working. One noticeable point that manifested itself soon after his appointment as General Superintendent was the very remarkable change in the appearance of the Superintendent's offices at Derby and elsewhere. Piles of dusty papers disappeared. The offices of the chief, heads of sections, and staffs, were redecorated, with a soon very noticeable decrease in the number of absences due to illness. In fact, the same policy was instituted throughout the system and what may be termed a professional "tidier up" made a tour of the stationmasters'

and other offices with equally satisfactory results. For many years the Midland Railway had been one of the most popular lines both with traders and the travelling public, but its operating methods had not kept pace with changing conditions. Lines had been widened, new lines constructed, new goods depots built, in addition to large increases in the number of locomotives and wagons. In fact, it was somewhat cynically remarked in financial circles, that when the Midland ceased raising new capital its ordinary dividends would also cease. But notwithstanding all this expenditure on new works and rolling stock, at the time Paget took control of the Operating Department, the traffic congestion in certain districts was so great it was no uncommon thing for a mineral train in a running loop or siding to be remanned two or three times without turning a wheel.

It was Paget's great task to put matters right, and in the course of the next few years he succeeded in doing so. Very soon after his appointment he noticed how much time was spent in "holding inquests" on matters that had gone wrong. He came to the conclusion that one of the first duties of his office was to put an end to such occurrences. For months he lived in an inspection coach, watching the working in congested areas by day and by night and formulating his remedy. During this time Paget did his own cooking, a habit which he maintained throughout his life, and one which many of his friends, including G.H.Q. officers in France, learned to appreciate highly. It was then that he "discovered" Mr. J. H. Follows, who eventually succeeded him as General Superintendent, subsequently becoming Vice President of the London Midland & Scottish Railway, and who carried on and extended with equal enthusiasm the methods of his former chief. The instrument that Paget evolved for effecting the cure was the Midland system of traffic control. This consisted of a central control office at Derby and eventually 25 district control offices. That, however, is only half the story, as he realised that the mere institution of controls would not itself effect a remedy. These had been preceded by careful investigation of the whole system and the maximum capacity of the various lines, a thorough revision of the working time tables, and the institution of "paths," some used every day, and others known as optional paths, so schemed that freight trains would arrive at junction points and depots at times that they could be dealt with. It was the work of the district control offices to give the necessary instructions by telephone and see that these carefully mapped out paths were utilised. The new method was introduced without any flourish of trumpets, although at the half-yearly meeting in August, 1909, the Chairman, Sir Ernest Paget, said:—

The traffic expenses are down by the large amount of £76,000, and the locomotive by £134,000. While I do not wish for a moment to belittle the efforts of the locomotive department, who have done splendid work during the half year, it is only fair to point out that they have been materially assisted by the traffic department in the matter of decreased mileage, and a better system of train control which has been established, and has been found to be very efficient. It was tried as an experiment on a certain area of the line, and was found so successful, that orders have been given for a considerable extension.

At the following meeting in February, 1910, the subject was again referred to, when in the course of his speech the Chairman said:—

Now, ladies and gentlemen, we can congratulate you and ourselves upon the fact that the Midland Railway is better operated now than I believe it has ever been since its construction. At all events I can speak for forty years. This has been brought about after a great amount of thought, an immense amount of labour, a considerable amount of

travel, and a certain amount of expenditure. It has been brought about by refusing to agree that because old methods have been in use for years by men of undoubted experience, that, therefore, they must not be questioned, and when those old methods would not stand the test of investigation, they have been ruthlessly thrown aside and better ones put in their place.

In fact, so modest was Paget that very little was published regarding the Midland system of traffic control until the full account which appeared in THE RAILWAY GAZETTE of July 8, 1921.*

Paget brought an original mind to solve a particular problem. It does not necessarily follow that methods which suited the traffic conditions of the former Midland system would be applicable to any railway, although the success which attended the introduction of traffic control on the Midland system caused quite a vogue in traffic control on other railways. Anyhow the Paget methods, continued by his successor, certainly brought the old Midland from a low to a very high state of operating efficiency. How efficient these were may be exemplified by the following quotation from the Chairman's speech at the annual meeting of the Midland Railway Company in February, 1919, when he gave a few very striking and interesting figures to show how the company had progressed under Sir Guy Granet's management:

We will take the year 1913, as that is the last complete year of railway working under pre-war conditions, and compare it with 1907, the year following Sir Guy's appointment as general manager. In 1913 the tonnage carried was 50,500,300 tons, an increase of 3,237,000 tons over 1907; but in spite of that increase in tonnage the train miles run were 1,650,000 less than in 1907, the delays to trains were less by 702,400 hours, and the coal consumed was less by 93,160 tons; fewer train miles, less delay and less coal all mean a large saving of money. The traffic receipts in 1913 were £13,297,000, an increase of £830,750 over 1907, while the dividend on the deferred stock—which in 1907 was £2 17s. 6d. per cent.—rose to £4 5s. per cent. Thus each holder of £100 deferred stock received £1 8s. 6d. more than in 1907; and at the same time the appropriation to reserve for the five years to December, 1913, rose to £2,708,185, an increase of £2,414,930 over the five years ended December, 1907.

Railway Wages

THE Railway Staff National Tribunal, which has been considering claims made by the Associated Society of Locomotive Engineers and Firemen, concluded the public hearing on Saturday last when questions were put by members of the tribunal with the object of "bringing out the strength and weakness of opposing arguments." From the outset the railway companies contended that the claims were inadmissible and constituted an attempt to break through the decision of the tribunal given in July last, while attention was drawn to the fact that the claims in respect of engine drivers, firemen and engine cleaners were alone estimated to cost £10,000,000 per annum; of this sum one item—that for the establishment of a six-hour day—would account for over £6,000,000. On Saturday last Mr. Kenelm Kerr replying for the companies stated that if a six-hour day were extended to all other sections of railway employees a sum of "well over £30,000,000" would be involved. He added that such an enormous addition to the companies' salaries and wages bill would be "most menacing" and that it might "cripple the industry," while the "power of the railway industry to afford employment would be diminished very alarmingly." There can indeed be no doubt that the

present level of railway income would be quite inadequate to fulfil such a demand, and that being so it could not be met within the ordinary railway budget, which still has a considerable leeway of net revenue to make up before even the level of 1929 is recovered. On what might be termed the labour aspects of the claims, there was, of course, considerable variance of views, but as both advocates were experts in these matters they were able, from their respective standpoints, to present to the tribunal a comprehensive and highly intelligible picture of what was, after all, a complicated position.

At the conclusion of the public sittings Sir Arthur Salter expressed the satisfaction of the tribunal that it had the advantage—"a great advantage as compared with tribunals dealing sometimes with other industries—of having statements of fact, as distinct from arguments based upon a fact, agreed in practically every case beforehand and not the subject of controversy and contention." In a concluding summary the chairman said that necessarily the tribunal will have to have in mind the decision which it took in July as implying a certain standard, and the standard which was then suggested. He then went on to refer to the fact that "a certain special inconvenience" is caused by an attempt to consider claims, which in their nature tend to apply to railway employees generally, at a different time of the year and out of relation to claims in respect of other grades of employees. Finally, Sir Arthur Salter warned the parties not to expect a decision "very quickly" so it seems fair to assume that it will not be published until after the Christmas Holidays.

* * * * *

A Plea for Articulated Locomotives

IN the interesting paper entitled "Some Suggestions on Steam Locomotive Design," by Mr. J. W. Beaumont read at a meeting of the Institution of Locomotive Engineers in London, the first suggestion put forward was that there should be a more extended use of articulated locomotives. The Garratt type, the author remarked, has now had some thirty years of development and has reached a high pitch of perfection. It has been adopted in this and many other countries throughout the world, but it may be doubted whether its advantages have even yet met with the full recognition they deserve. The arguments in its favour are generally well known, but two of them were particularly referred to in the paper, the first having reference to weight distribution and the second to the design and proportions of the boiler. If sixty tons be taken as the useful weight of a locomotive, and that weight can be conveniently distributed over four or six axles instead of three, there will obviously be a large saving not only in first cost but in maintenance costs of way and works, the locomotive being the only vehicle on the railway at the present time that necessitates anything like a 100-lb. rail. The other advantage is the greater latitude this system of construction gives to the design of the boiler or steam generator. Great advances have been made in recent years in apparatus, both electrical and mechanical, for the distant control of machinery, and there seems no reason why a Garratt locomotive should not be controlled entirely from a footplate or cab placed at either end, when the full profile of the steam generator in its casing could be the same as that of a coach built to the full limits the structural gauge will allow. There have been many cases in which steam locomotives have been built with a driver's cab at each end, and the fact of the engine being articulated does not, so far as can be judged, interfere with this arrangement being adopted.

* Since reprinted as a brochure, "The Train Control System of the Midland Railway." Price 5s. net.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Unusual "Mixed" Gauge

Biblioteksgatan 11,
Stockholm, Sweden.
December 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to the letter published in your issue of December 4 on "Why Russia Adopted the 5-ft. Gauge," your readers may possibly be interested in a stretch of double gauge line between Haparanda and Tornio, the frontier towns of Sweden and Finland at the head of the Gulf of Bothnia. The two railway systems are connected by a bridge across the river which forms the dividing line between the two countries and there are four rails on what might be termed a single track across this bridge for accommodation of the two standard gauges, 4 ft. 8½ in. and 5 ft. 0 in., which are too close together to permit of merely one extra rail. Incidentally this bridge has a swing span which is normally kept closed to rail traffic and opened to the river, probably less for navigation purposes than to form an effective frontier guard.

Yours faithfully,
RODGER L. SIMONS

[The bridge referred to by our correspondent is probably unique in combining the two features mentioned.—ED. R.G.]

Signalling on Tramways

304, Beulah Hill,
Norwood, S.E.19.
December 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Following the note "Signalling on the Dover Tramways" published on page 889 of your issue of November 27, may I remind you that tramways and signalling have been associated from the earliest times of this form of street transport. An early horse-worked line in Portsmouth had a semaphore signal installed at a blind corner, together with a signalman permanently in attendance—a refinement not perpetuated in modern systems. That was in 1879, since when tramway signals have multiplied in number and design. The late Portsdown & Horndean Light Railway (worked as a tramway) used automatic electric semaphores, while the L.P.T.B. Kingsway subway, before its reconstruction, used lights, operated by mechanical contacts on the cars. These lights are now operated by track circuit, which is easy to apply on a conduit line, since the return current for the car motors does not pass via the running rails.

The L.P.T.B. route (late Bexley Council) from Plumstead to Dartford (converted this year to trolleybus working) used manually-operated lights, similar to those at Dover save that they took current via a transformer, from the trolley wire. Today, this route provides what I believe to be the only example of interlocked overhead points and signals to be found on a trolleybus line, namely, at the junction with the existing tramway line at Wickham Lane, Plumstead. The overhead frogs are worked at will by the motorman, through the usual agency of an overhead contact, a fixed semaphore illuminating at the same time, according to the state of the frogs.

Yours faithfully,
O. J. MORRIS

[The signalling at the northern end of the Kingsway tramway subway was referred to in an editorial note on page 274 of our issue of August 25, 1933, where we pointed out that it is controlled by plough-operated contacts, not track-circuit.—ED. R.G.]

The Bristolian in Bad Weather

London, December 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—During the gales and fogs, which alternated through the latter half of November and beginning of December, the writer had occasion to travel three times from Paddington to Bristol and back by the Bristolian, and you may be interested to know how this high-speed train fared, as regards punctuality, under unusually bad weather conditions. Our engine was a "Castle" on each journey, and we had the usual load of 7 vehicles, 222 tons tare.

The first down run was made in a violent side-gale, and resulted in 8 minutes late arrival at Bristol—4 minutes being attributable to engineering delays and the remainder to bad weather; the other two journeys were completed in 104 minutes, the first in a north-easterly gale with one signal check after Bath, and the second in a patchy fog from Maidenhead to Swindon, which caused a noticeable easing where speeds are usually high. The 9.15 from Paddington, which is booked to reach Swindon narrowly in front of the Bristolian, caused no delay at all.

The up journeys were not quite so satisfactory. The first two were made in the teeth of an easterly gale, and the third in fog for 70 miles of the run, and we arrived at Paddington 7, 3, and 11 minutes late respectively. Of the first late arrival, 6 minutes were due to a stop east of Didcot; the second was due to engine; and of the third, 6 minutes were accounted for by a stop at Goring and 3 by signals nearing Paddington, the train being out of its proper path and delayed by the outgoing 6.10 Birmingham express.

It is doubtful whether any other high-speed service could show so satisfactory a record, and such freedom from signal delays, under conditions which were causing widespread dislocation of traffic, and many passengers were commenting on the fact.

Yours faithfully,
VIATOR

New L.N.E.R. High-Speed Trains

December 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. R. A. H. Weight's letter in your issue of December 11 contains some very interesting proposals, but I hardly think he need fear lack of patronage for a 6-hr. Edinburgh service, whatever the starting time may be, provided there is an intermediate stop at Newcastle. A non-stop train over the L.N.E.R. to Edinburgh, or even over the L.M.S.R. to Glasgow, might, however, need very careful planning, to secure a satisfactory all-year-round load.

But Mr. Weight's suggested 2.45 p.m. departure from King's Cross seems to me to be open to serious objections. It is surely undesirable to mix up these new high-speed trains with long-established ordinary services, and Mr. Weight's 2.45 would obviously attract all the Newcastle and Scottish passengers from the 1.20 and would have no "covering" train, such as the 5.45 from King's Cross and 10.35 from Newcastle for the overflow from the Silver Jubilee. There would be no advantage whatever for passengers from Leeds and other Yorkshire towns to Edinburgh, who badly need a later service, and complaint might arise from the fact that a supplement would be necessary to secure the 8.45 arrival at Edinburgh (and the connections north and west) which the ordinary service now gives.

And are not Mr. Weight's "ordinary travellers . . . who almost invariably prefer midday travel . . ." already liberally catered for at midday?

Yours faithfully,
R. E. CHARLEWOOD

PUBLICATIONS RECEIVED

International Chamber of Commerce (Brochure No. 91). Commercial Arbitration under British Law. By J. E. James, LL.B. Paris: International Headquarters, 38 Cours Albert 1^{er}. Paper covers. 31 pages. No price stated.—In this brochure the British law relating to commercial arbitration is dealt with in three parts. In the first part is the law prevailing in England, in the second Scottish law, and in the third the law in Northern Ireland. The author of the brochure gives in pithy paragraphs, which are easily understandable, the essential information necessary for international transactions. In England and Wales the law of arbitration is conveniently and substantially contained in the Arbitration Acts of 1889 and 1934. At the same time the Common Law still has force outside those Acts and in their interpretation and operation. In Scotland the law of arbitration rests largely on the Common Law, but there is one effective Act of Parliament in force, namely, the Arbitration (Scotland) Act, 1894, which contains only four operative sections. A very useful table is given in the brochure showing, side by side, the differing legal terms and phrases in England and Scotland. In general effect the law of arbitration is much the same in the two countries, but the author sets out clearly and concisely the material variations between them. Generally speaking, the law of arbitration in Northern Ireland is the same as in England, although it is based on certain sections in the Imprisonment for Debt Act, 1840, and in the Common Law Procedure Amendment Act, 1856, and also rests on the Irish Common Law. A summary is added of the chief points in which the law differs in the two countries. How foreign awards may be enforced is a useful piece of information given on page 17.

International Chamber of Commerce. (Brochure No. 72.) Commercial Arbitration under German Law. By International Headquarters of the International Chamber of Commerce in collaboration with the German National Committee of the International Chamber of Commerce: Paris, International Headquarters, 38, Cours Albert 1^{er}. 28 pages. Paper covers. No price stated.—This report claims to be entirely practical in aim, is intended for business men and does not pretend to be a complete technical treatise on the subject which it covers. It seems to us amply to justify this claim and to be of great use to British firms having dealings with German clients. The laws governing arbitral procedure are all contained in Book X (par. 1025—1048) of the German Code of Civil Procedure (Zivilprozessordnung) of January, 1877, edition of January 1, 1934. Arbitrators, are, however, not bound to follow the procedure laid down by the Code of Civil Procedure, and may, in the absence of agreement between the parties, deter-

mine the procedure at their own discretion. They may hear witnesses or experts without being bound to observe any special formalities, but may not order them to appear nor administer oaths to them. When more than two arbitrators are nominated, it is customary to appoint one of them as umpire and to entrust him with the conduct of the proceedings. German law, however, confers upon the umpire no other powers and duties than those of the other arbitrators, and he has not a preponderant vote, unless otherwise agreed by the parties. In the chapter dealing with the enforcement of an award, reference is made (on page 16) to the enforcement of foreign awards and to international agreements. There is an appendix giving the relevant sections of the latest edition of the Code of 1877.

Tanganyika Guide. London: Crown Agents for the Colonies, 4, Millbank, S.W.1. 8 in. × 5½ in. 136 pp. Illustrated. Folding maps. No price stated.—Tanganyika Territory is the largest country administered under the aegis of the Colonial Office. It comprises that portion (some 374,000 square miles) of the former colony of German East Africa which, under Article 22, Part I, of the Peace Treaty, the principal Allied and Associated Powers agreed should be administered under a mandate by this country. This illustrated handbook describes the country, its resources, and topography. A remarkable variation of climate and soil enables the cultivation of plants of tropical, sub-tropical, and temperate species. The three principal exports are sisal, cotton, and coffee. Timber and mining are also two of the leading industries of the territory. A chapter devoted to transport and communications deals briefly with the railway and road services. Internal air services and those operated by Imperial Airways to and from London, Johannesburg and Cape Town are also mentioned. There are a number of pages devoted to descriptions of the facilities afforded for big game hunting, fishing, and other pastimes. A final section of miscellaneous information deals with such matters as trade, immigration regulations, and taxes. The folding maps are well produced and easily read.

A Yearbook of Railroad Information: 1936 Edition. New York: Published by the Committee on Public Relations of the Eastern Railroads, 143, Liberty Street. 6 in. × 4 in. 96 pp. Gratis.—For some years past the Western Railway's Committee on Public Relations has prepared, and the Committee on Public Relations of the Eastern Railroads has published, an annual booklet presenting in both graphic and statistical forms a wealth of information regarding the railways of the U.S.A. The present edition, which bears the date "October, 1936," has just come to hand, and appears to

cover its ground as fully as its predecessors. The reason for publication so late in the year is, of course, the desire to include figures for the calendar year 1935, and this has been achieved in practically all cases. A curious failure is in respect of the weight of rails, where the latest totals are for the year 1934. The trend towards the use of heavier rail sections is clearly marked by comparisons with 1922, but more recent figures would have been desirable. As a ready reference for authoritative information relating to the U.S.A. railway industry, this booklet is a valuable production.

A Survey of the Present Organisation of Standardisation—National and International. London: Central Office of the World Power Conference, 36, Kingsway, W.C.2. 10½ in. × 7½ in. 55 pp. Price 3s. 6d.—This report sets out the machinery of standardisation as it functions to-day in the principal industrially-developed countries of the world, and also the scope of the international standardising bodies so far established. There is some lack of co-ordination between the activities of the latter institutions, and it is hoped that the publication of this report will assist in bringing into line their various spheres of action. The summarised particulars are arranged alphabetically under countries, and the useful appendices include a list of the abbreviated designations of the bodies described in the survey.

Oil-Hardening Tool Steel.—Edgar Allen & Co. Ltd., Imperial Steel Works, Sheffield, has published a new edition of the attractive and interesting booklet dealing with K.9 oil-hardening tool steel. Described as "the steel that minimises warping and distortion," K.9 has a toughness and resistance to wear that makes it very economical. It is easy to heat-treat, and recommended for tools requiring the maintenance of the highest accuracy. Following a section of users' reports, the booklet presents some useful information regarding the treatment of the steel. New illustrations of tools and other parts in K.9 steel are included in this edition.

"Copper for Bus-bars."—The Copper Development Association, of Thames House, Millbank, S.W.1, has published an illustrated text book dealing with the use of copper for bus-bars, and including some information not hitherto generally available. This book, which is neatly bound in stiff covers and well indexed, is available to those concerned with the subjects of which it treats upon application to the association. There are 29 diagrams, and the same number of half-tone illustrations. Chapters on current carrying capacity and electromagnetic stresses are followed by directions for jointing; a section on the effects of weather and temperature on outdoor high-voltage bus-bars; and notes on the properties of copper making it particularly suitable as a bus-bar material. Conversion factors, and tables of conductivity, weights, and similar data, conclude the book.

THE SCRAP HEAP

"What do holidaymakers do with the enormous amount of luggage they take with them?" asks a writer. Well, quite a large proportion of it they leave in the trains.

W. Aldridge started with the Metropolitan Railway at Hammersmith, on April 13, 1886, and worked under Bodymaker Maxwell, whom he afterwards succeeded. But after holding this appointment for 20 years it was discovered that he had not served an apprenticeship, so he was taken off.—*From "Pennyfare."*

More than 30,000 empty stockings will be hung up this Christmas by the National Institute for the Blind. They will serve as collecting boxes for blind babies, and be displayed in trains, shops, bars, passenger aeroplanes, and other places throughout the country. A trawler skipper and several taxi drivers have asked for them. There will be a full stocking on Christmas morning for each blind baby in the institute's sunshine homes.

Christmas trees are now being cut in Canada and are being despatched by the freight services of the Canadian National Railways towards various markets in the United States. Last Christmas 3,573,642 trees were cut in Nova Scotia, New Brunswick and Quebec and despatched to United States centres. The popular demand is from 6 to 10 ft. in height. New York is the largest buyer, requiring from 400 to 425 wagons annually, or approximately 714,000 trees, as 1,500 to 2,000 are loaded on each wagon.

LIVE WIRES

With reference to A. Fox's letter (in your issue of November 4) suggesting fencing off railway lines with railings charged with a low-powered

current, I remember some years ago a multiple store tried the experiment at one of its branches to keep children away from the shop front. On the first day of its installation it had to be dispensed with because of the great crowd of children which assembled. The novelty of the mild electric shock (for such it had to be) was irresistible.—*Mr. J. B. Payne in a Letter to the Editor of the "News-Chronicle."*

Doubtless, pleasant memories of breakfast on the train could be recalled by travellers in other lands. There is the cheerful cup of tea served on the overnight train from King's Cross to Edinburgh after crossing the Cheviot border northward. There is the equally courteous South Manchurian railway attendant with a cup of tea in the early morning before entering Mukden, after an overnight run from Dairen. There is the breakfast view of the Inland Sea of Japan from the Nipponese train *de luxe* between Shimonoseki and Kobe. It may be even possible to get marmalade with a continental breakfast on some of the European trains.—*From the Ottawa "Evening Citizen."*

LARGE OR SMALL TURNIPS?

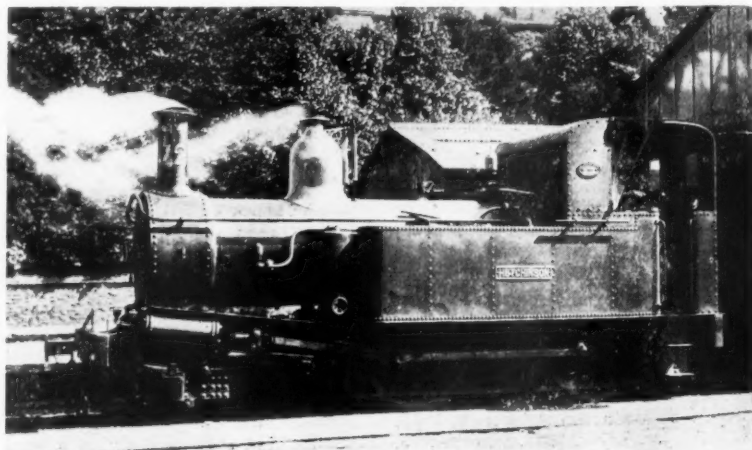
Why does one city prefer a large turnip while another prefers a smaller? Probably custom has a lot to do with it. In the United States, New York and Pittsburgh are partial to the large size, 4 to 6 in. in diameter. Boston likes her turnips medium, 3 to 5 in., and Philadelphia, Cleveland, and Baltimore smaller still, 3 to 4 in. Canadian turnips from Prince Edward Island and Ontario are the preferred choice, as compared with the domestic product, because of their fine flavour and appearance, according to the Agricultural Department of the Canadian National Railways. Canadian turnips are pur-

chased by hotels and restaurants and by the average housewife, while the domestic turnip is sold in the United States for the most part on local farm markets or to factories. New York and Boston are the main consuming centres for Canadian turnips, those from Prince Edward Island command the highest price.

A Floating Railroad.—A plan has been devised for carrying the trains across the Tay, at Broughty Ferry, where it is about a mile and a half broad. Mr. Robert Napier is at present building, in his yard at Govan, a floating railway for the Edinburgh & Northern Railway. It is being built of iron, 180 ft. in length and 35 ft. in breadth. It is to have three lines of rails on deck, so as to enable it to take on a railway train of 500 ft. in length, and is to be propelled by engines of 250 h.p. As the main line of railway on each side of the Tay is considerably above the level of the sea, stationary engines on either side of the firth are to be employed to draw up or lower the trains.—*From the "Perth Courier" of December 23, 1848.*

THE ISLE OF MAN RAILWAY CREST

A curious feature of the accompanying picture of the Isle of Man Railway Company's picturesque crest is that it was not taken from a crest on the side of a railway locomotive or vehicle, but from one on a panel of one of the I.O.M. Railway Company's motorbuses. There must be few if any precedents for a bus being adorned with a reproduction of a locomotive, particularly of one of the fairly old type such as that used in the I.O.M.R. crest. This crest consists, as will be seen, of a locomotive mounted above the three Legs of Man. The engine is one of the famous little 2-4-0 tanks supplied to the island by Beyer Peacock & Company, of Gorton; a similar engine, No. 12, *Hutchinson*, is illustrated alongside.



Left: Crest used by the Isle of Man Railway on the panels of its motorbuses. Right: one of the 2-4-0 Beyer Peacock tank engines of the type included on the crest

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

BRAZIL

Central of Brazil Railway

A novel system for doing business was recently suggested to the Ministry of Transport, when the Brasunide S.A. Company offered to supply rolling stock and locomotives to the Central of Brazil Railway and receive in payment for them 60 books similar to cheque-books, representing 1,350 contos worth of freight. The suggestion was also that this firm should canvass traffic for the Central Railway, and, whilst charging normal rates to senders, it would pay the railway by freight cheque, transport to the value of 1,350 contos being spread over a period of 60 months, which would be the equivalent of the railway making the purchase by 60 monthly instalments. The proposal was, however, not accepted.

The Norte station, at São Paulo, is to be covered in, and, when rebuilt, will be the premier passenger station of that city. A special feature of the work will be the construction of a glass partition between the main building and the platforms, thus combining beauty and utility; it will also prevent smoke from penetrating the main hall. A great photograph of the Guanabara Bay, Rio de Janeiro, 60 m. in length, will be affixed facing the hall, to add to the general effect.

Government Credits for Railways

A Decree has been signed providing for a supplementary credit of 4,080 contos for continuing the construction of the Estrada de Ferro S. Thiago A.S. Borja.

The President of the Republic has also asked the House of Deputies to grant a credit of 18,000 contos for urgent repairs to permanent way and for the supply of material and rolling stock to the Eastern Railways.

Report on Working of the Sorocabana Railway, 1935

According to the report of the Acting Director, Dr. Mario Salles Souto, of this system, the financial results for the year 1935 were better than any yet recorded in its financial history.

The principal details, compared with those of 1934, are as follow:—

	1934 contos	1935 contos
Gross receipts ...	83,280	100,973
Expenditure ...	67,996	81,090
Nett receipts ...	15,284	19,883
Operating ratio ...	per cent. 81.65	per cent. 80.31

Various factors contributed to this notable increase in receipts, notably a wave of greater prosperity in the district called Alta Sorocabana, where agriculture, industrial, and commercial undertakings are improving daily.

Although coffee production was more or less the same as in the previous year, cotton increased appreciably, contributing 4,592 contos to the total receipts. Fruit increased by 26,668 tons and cereals and sugar 9.90 per cent. and 1.84 per cent. respectively. Building materials increased 33.08 per cent. and traffic from feeder railways, especially the North Western of Brazil, swelled receipts by 7,958 contos as against 5,848 contos in 1934, a fact significant of the greater prosperity prevailing in the areas served by these other lines. Some 500 thirty-ton wagons, 8 ten-coupled locomotives, 8 shunting engines and 10 motor lorries were acquired during the year.

Improved Road Traffic

Efforts to recapture traffic lost to the roads were increasingly successful and hence the acquisition of the 10 new motor lorries, and the inauguration of new road transport agencies at Baurú, Curitiba, and Joinville. The 60 lorries now in service collected 66,740 tons of traffic for rail transport during the year.

The Problem of Fuel

Special reference was made to the fuel problem which is becoming more acute every year. The 1935 fuel bill was 23,447 contos, made up of: firewood 11,697 contos, Cardiff coal 11,305, and National coal 445, which represents an increase of 7,628 contos over last year. The lack of good firewood close to the line, necessitating longer hauls, the unfavourable exchange situation for the purchase of Cardiff coal, and the unsatisfactory quality of the National product were jointly responsible for the increase in expenditure under this heading, but steps were being taken to increment afforestation schemes near the line, as a complement to the 250,000 trees of different qualities already planted at Mayrink. The attempts to extract coal at Bury have not been successful, but experiments are continuing in other areas where seams are believed to exist.

Work on the Mayrink—Santos line continues, and 260,592 contos has been spent up to date; 19,610 contos were spent during 1935. Of the 32 tunnels projected, only one remains to be completed, making the aggregate length of tunnelling 5,003 m. At present 108 of the 135 km. of line between Mayrink from Santos are already open for traffic.

Viação Ferrea do Rio Grande do Sul

The President of the Japanese-Brazilian Economical Association, when received by the Porto Alegre Commercial Association, stated that Japan proposed to supply railway material to the State in exchange for merchandise,

such as wool, skins and other raw materials.

NEW SOUTH WALES

New Lines of Railway

The New South Wales Government Railways are at present carrying out preliminary work in connection with the extension of the Sydney—Sutherland line to Cronulla, a distance of 6½ miles. The estimated cost of construction excluding land is £414,000, for an electrically operated single line with five stations.

A more extensive project is that for a chord line from Maryvale near Wellington, on the western line, to Sandy Hollow, on the branch from Muswellbrook to Merriwa, a distance of about 150 miles.

INDIA

Railway Conference Association ; The President's Speech

In the course of his presidential address, Mr. H. N. Colan reviewed the various problems facing the railways. Examining the various suggestions for revising the existing rating structure, Mr. Colan pointed out that the proposal to abolish the differences between the charges for the same commodity on different railways, if made effective, would obviously lead to the imposition of a rate representing some mean of the existing rates. The curtailment of the powers of the railways to quote special rates was unsuccessfully tried in England, and he was sure that a similar result would follow such an attempt in India. Mr. Colan suggested that the railways should collect statistics which would be necessary if the revision of the rating structure became unavoidable.

Road Competition

In regard to the road-rail problem, the President repudiated the assertion that the request for control and restriction of road transport was born of the desire to strangle a more economical form of transport, because the railways were unwilling to reduce their own costs to compete with it. It was not correct that motor transport was more economical or that the reduction of administrative costs would enable the railways to meet road competition on equal terms. If things were left as they were at present, there could be only one result, namely that the railways would eventually have to be subsidised out of the taxes either directly, or indirectly by writing down the capital invested; it would also be necessary to revise the structure of rates. The only other course was the regulation or restriction of road traffic, and the real difficulty in the way of a solution of this problem was one of divergence of interests between the Central and Provincial Governments. The question as to whether it was possible for the Pro-

vincial Governments to have financial interests in their railways was, therefore, worth investigating. Mr. Colan considered that the railways should give the public the assurance that they would definitely provide the facilities and conveniences afforded by motor transport, provided the decision was not taken to relegate the railways to the position of carriers of less remunerative traffic.

Railway Member's Speech

Sir M. Zafrulla Khan, Member for Railways and Commerce, who was unable to attend the opening of the conference, sent a written address which was read out by Sir Guthrie Russell.

The Railway Member welcomed Sir Ralph Wedgwood and his colleagues who had undertaken the arduous task of diagnosing the ailments from which Indian railways might be suffering, of suggesting remedies for their cure and making recommendations on other matters of general interest. He assured the committee of the fullest co-operation and assistance in the discharge of their heavy responsibility.

Referring to the slight, though steady, improvement in the financial position of the railways during recent months, he observed that the improvement was due entirely to a brisker movement of commodities and not to the recovery by railways of any portion of the traffic lost to the roads. Passenger traffic still continued to be unsatisfactory, even after making due allowance for unrestricted and uneconomic competition from road motor transport. Sir Zafrulla was unwilling to believe that, with regard to passenger traffic at least, the situation was not capable of considerable improvement. He pointed out that complaints, in many cases well-founded and justified, still continued to reach the Government of lack of consideration, want of courtesy and absence of helpfulness on the part of the railway staff towards passengers on some systems. There were signs of improvement in this respect, but much yet remained to be done, particularly in the arrangements for the booking of third class passengers and in the standard of cleanliness in third class waiting halls and carriages.

Timetables and Ticketless Travel

In regard to timings and train connections, the Railway Member thought that the task of framing timetables on the railways was approached in too mechanical a spirit. He desired to emphasise that the convenience of the travelling public must always be the ruling consideration, and this, he was sorry to remark, was, not infrequently, overlooked. He suggested that local civil authorities should from time to time be consulted with regard to the timings of trains serving their areas.

In regard to the Bill recently taken up in the Legislative Assembly to strengthen the provisions of the Indian

Railway Act relating to ticketless travel, Sir Zafrulla Khan observed that the explanations furnished on behalf of the Government would go a long way towards meeting the criticism that the Bill had aroused. He hoped that it would be possible to get through the remaining stages of the Bill during the next Budget session.

The session of the Indian Railway Conference Association concluded on November 28 when Sir Maurice Brayshay was elected President of the Conference for the ensuing year.

HONG KONG

The Kowloon-Canton Railway

This railway which is destined in the very near future to form an important link in the overland route from Hong Kong to London continues to show good progress in the gradually improving conditions in China. The section in Chinese territory, from the border station Shum Chun to Tai Sha Tou station in Canton, is—as part of the Chinese Government Railways—under separate management. It is operated in close co-operation with the management of the British section and the British operation practices and rules are followed in detail on the Chinese section. The 22.1 miles in British territory and the 88.7 miles in Chinese territory are worked as a single line, and there is a customs barrier at the border, but the customs examination for passengers takes place at Kowloon before the departure of trains, and on the trains in the return direction.

The Passenger Services: Speeds and Timings

Since its opening in 1910, the K.C.R. has always been primarily a passenger line; the management, even in abnormal times has been very efficient, and has kept pace with modern practice elsewhere. The passenger traffic is at present showing substantial increase, and on an average 2,000 passengers are booked to Kowloon from the Canton terminus alone every day, and the express trains carry normally over 800 passengers in each direction. Since January, 1935, three fast trains in each direction have been running, and these cover the 110.8 miles between Kowloon and Canton in 2 hr. 55 min., including four intermediate stops (of 2 min. at Shum Chun, 1 min. at Ping Wu, 2 min. at Cheung Muk Tou, and 3 min. at Shek Lung) at average speeds of 37.8, 40.8, 40.0, 39.4, and 40.8 m.p.h. between the stops. The running speed is considerably higher, as there are many speed restrictions on the Chinese section; there are crossing or tablet stations at frequent intervals varying from $3\frac{1}{2}$ to 9 miles apart. On the Chinese section a general speed restriction to 50 m.p.h. is in force, with a further restriction to 25 m.p.h. through all facing points; on the British section the only speed restrictions are those through facing

points, to 35 m.p.h. on the straight and to 20 m.p.h. over the turnouts.

The Named Expresses

Two of the three fast trains in each direction, the Flying Arrow and the Flying Star in the up direction, and the Flying Eagle and the Flying Dragon in the down direction, are composed of corridor stock, namely, one first, two second, four third class carriages, two third-brakes and a dining car. The two mid-day fast trains, without names, have one second and one third class carriage fewer. One engine turn works the six fast trains daily over the British section, and three engines are used for the corresponding turns on the Chinese section. In addition to the fast trains, one through slow train, one through mixed train in each direction, and eight local trains on the British section only in each direction, are operated daily. [Further particulars of this service and of the locomotives used appeared on page 1247 in our issue of June 28, 1935. See also illustrations on page 1036 this week. —ED. R.G.]

Kowloon terminus is situated on the waterfront and is connected by a ferry service with the City of Hong Kong. The railway has been built through a very hilly country, involving many engineering works which are kept in excellent repair. The necessary space has been provided for a future second track, and the connection with the harbour front is well laid out.

Future Developments

Important developments are expected when the contemplated connection with the Canton-Hankow line has been completed, and it is surmised that considerable goods traffic will pass over the K.C.R. on its way to and from Hong Kong harbour; it will be an easy matter to equip the line for this traffic. Nowadays the goods traffic is entirely served by the mixed and occasional special goods trains.

Your correspondent is indebted to Mr. R. D. Walker, General Manager of the British section for the information supplied, and for the particulars shown him during a recent visit.

CHINA

Steam Heating on the Railways

With the long distances traversed on the railways and the varying temperatures encountered, special attention has to be given to the heating of the trains, and the Ministry of Railways has issued instructions to the various lines to ensure adequate heating on the passenger trains. Difficulties are at times encountered in maintaining the warmth necessary for the comfort of passengers owing to the varying types of connections on the stock of different lines, and when non-fitted stock has to be used in emergency. A special staff has been appointed to give attention to the question in order to avoid cause for complaint in the coming winter.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Suggestion for a Railway-Owned Road

SIR TREDREDYN WYNNE, presiding recently at the annual general meeting of the Bengal-Nagpur Railway, mentioned a novel proposition that is to be placed before the Railway Board in India. It is suggested that an extensive plateau, which borders the company's Raipur—Vizianagram branch for some 150 miles, should be exploited by a railway-owned road. The soil on the top of the plateau is, apparently, well-suited to cultivation, and there is a population of about a million people. At present, however, there is no means of communication except that provided by an inferior road, and this is used only by a few lorries and buses. Surveys have shown that to run a 2 ft. 6 in. gauge railway to the top of the plateau would be uneconomical. A road, on the other hand, could be made a sound business proposition. The railway company is, therefore, seeking permission from the Railway Board to build a road to be worked on railway principles, providing both goods and passenger services. Facilities for through bookings to and from any railway station in India would be offered.

Animal-Drawn Transport Condemned in South Africa

THE report of the South African Central Road Transportation Board for the year ended March 31, 1936, commenting on uneconomic animal-drawn road transport which in certain areas is gaining ground in competition with established services, suggests that the remedy lies in the passing of "legislation which will place under one control not only the construction and maintenance of road vehicles but also the licensing and control of all road vehicles of whatever nature." This is of particular interest to the railway administration as unrestricted animal transport, as was pointed out in the Railway Board's report for the year ended March 31, 1935, is threatening to make serious inroads upon legitimate railway traffic. There is no objection raised to the poor man using his wagon and donkeys to eke out a bare living, but there is considerable resentment in many quarters at the intervention of those who finance animal transport without any scruples. Cruelty to draught animals, as the report of the Central Road Transportation Board points out, seems inseparable from long-distance donkey transport.

Heavy Haulage

HEAVY haulage is an aspect of the road transport industry of peculiar interest, as it calls for far more than the mere transport of exceptionally heavy or out-size consignments. Indeed, the heavy haulage contractor has to be a jack-of-all trades. This is clearly demonstrated by our article describing Pickfords Heavy Haulage Department which appears on page 1029 of this section. The department has had no small influence upon the development of the rest of Pickfords organisation, as it was the cradle of mechanisation. For this the company's

present General Manager was largely responsible. Today the department, through its various branches and subsidiaries, has an organisation extending throughout the entire country. Specialisation has led to the building up of an unparalleled fleet of vehicles capable of accommodating almost any load. Many of these, incidentally, have been built by outside contractors to Pickfords own designs. There is probably no branch of Pickfords activities in which experience plays such an important part.

Abnormal Loads: New Regulations

UNDER the Motor Vehicles (Authorisation of Special Types) Order (No. 1), 1936, which came into force on December 1, all contractors for the conveyance of abnormal indivisible loads are required to issue forms of notice to the police, and a form of indemnity to all highway and bridge authorities through whose district and over whose roads and bridges the loads are carried. These forms are standardised by law, and we reproduce below the indemnity forms prepared for the purpose by Pickfords Limited. The form of notification is similar, except that

THE MOTOR VEHICLES (AUTHORISATION OF SPECIAL TYPES) ORDER (No. 1), 1936.

To _____

Date _____

In pursuance of paragraph 10 of the above-mentioned Order, WE, PICKFORDS LTD., of _____ being the owners of the undermentioned vehicle(s) to which the Order applies, hereby give notice that it is our intention to use the said vehicle(s) on the roads specified below:

from _____ to _____
starting at _____ a.m./p.m. on the _____ day of _____ and
completing the journey at _____ a.m./p.m. on the _____ day of _____
approximately. The route proposed to be followed is:—

PARTICULARS.

- Vehicle(s) to which the Order applies.

Index Mark and Registration No.	Carrier's Licence No.
Type	Description of Load
Overall dimensions of vehicle: (inclusive of load, if any)	
Maximum height	Maximum width
Weight of vehicle (inclusive of load, if any)	Maximum length
Wheels and tracks. In accordance with the attached sketch.	
- Vehicles (if any) drawing or drawn by the above-mentioned vehicle(s).

Index Mark and Registration No.	Carrier's Licence No.
Type	

INDEMNITY.

WE HEREBY agree to indemnify you in respect of any damage which may be caused to any road or bridge in respect of which you are the highway or bridge authority by reason of the construction of or the weight transmitted to the road surface by the above-mentioned vehicle(s) to which the Order applies not being in accordance with the requirements of the Regulations made by the Minister of Transport under Section 30 of the Road Traffic Act, 1930, provided that the claim in respect of such damage is made within 12 months of the time when such damage was caused.

p.p. PICKFORDS LTD.

the indemnity paragraph is omitted. The provisions of the Order are modified and rationalised forms of Statutory Rules and Orders No. 20, 1931, and by removing a number of objectionable restrictions and anomalies should enable the legitimate contractor to carry on his business to the greater benefit of the community. The new regulations are the result of prolonged negotiations with the Ministry of Transport on the part of the railway companies, the British Road Federation, the Home Office, and the various local authorities.

Coach Station Arrangement

WITH the steady growth of medium-distance coach services, stimulated by co-ordination with the railways, there has been a growing need for up-to-date coach stations as complete in themselves as many railway stations. Notable examples have from time to time been described and illustrated in these columns. For instance, in recent months we have dealt with the new stations at Blackpool and Norwich. The layout of any station must, of course, depend very largely upon local circumstances, but the general design once settled upon there remains to be determined how best the traffic can be handled. Should vehicles pull up side-by-side nose or tail on to a platform, or should they draw up end-to-end alongside a platform? That appears to be the main problem. Where there is little delay between arrival and departure, or the use of the station is not intensive, it may be that the latter plan is most convenient, and the illustration on page 1031 shows such an arrangement. Otherwise, however, it would seem that the side-by-side method has every advantage, especially if the vehicles are arranged in herring-bone fashion. Reversing out of the rank need then cause no delay as the wheel may be left in the same lock as that which brought the coach up to the platform.

Progress in the Isle of Wight

ALTHOUGH the Southern Vectis Omnibus Co. Ltd.—which takes its title from the Roman name for the Isle of Wight—is the smallest of the railway-associated bus companies, it is by no means the least in interest. As with other holiday districts, the area served experiences a very marked difference between its summer and winter populations. The census figure of under 90,000 is more than quadrupled every year at the height of the season, and consequently the demand for passenger services fluctuates enormously. This year the company introduced for the first time double-deck vehicles (six in all) at the beginning of the summer and these have worked successfully ever since on three of the most important bus routes, all in the northern half of the island. Although there was a good deal of opposition to the proposal, we understand that there has been no active opposition since the first day of operation. The introduction of these was not only the first use by the company of double-deck vehicles but also its first adoption of oil. The buses comprising Dennis Lance chassis equipped with Gardner five-cylinder oil engines. These diesels have proved so satisfactory that two Gardner oil-engined Bristol double-deckers have been ordered for introduction in the week before Easter and two similar single-deck vehicles for introduction before the summer. The total fleet expected to be in operation next season is 8 double-deck, 57 full size single-deck, and 18 smaller single-deck, making a total fleet of 83 as against the 66 that were in service in the summer of 1934 when we described and illustrated (on page 21 of our issue of July 6, 1934) the new Southern Vectis garage at Newport. The long period between seasons is being used to prepare a certain number of alterations for the coming

year based on the experience of the last two seasons and on the fact that an important operator in the Sandown area was purchased last March and an agreement has now been signed for the acquisition next March of the business of a local operator in Ryde.

Crosville Improved Parcels System

THE territory in which Crosville Motor Services Limited operates, comprising Cheshire, parts of Staffordshire and South Lancashire, and practically the whole of North and Mid Wales, is mainly one with a widely scattered population. With the considerable improvement made in the standard of highways in these areas during the last few years, there have been many developments, and housing estates are springing up almost everywhere both on and off the main routes. This has provided an immediate and difficult problem for tradespeople whose individual parcels delivery services are fast becoming an uneconomical proposition. In certain cases the cost has been so great that business houses have had to decline to deliver a customer's purchases, particularly where the places of residence are not easily accessible. Appreciating that the position for tradespeople would become far more difficult as time proceeded, Crosville Motor Services, with extensive facilities extending over thousands of miles of bus routes, set about finding a solution, and, after months of close attention to the matter, recently produced an improved and extensive parcels delivery service both for business houses and for private individuals. All classes of parcels, with certain necessary exceptions, and up to a weight not exceeding 112 lb., can now be delivered from one point to another on the company's system. Where parcels cannot be conveyed on direct services, arrangements have been made for their transfer to suitable connecting services on the main routes. Over 500 receiving agencies have been appointed on the direct line of routes and in the majority of cases they deliver the parcels within a radius of half a mile of their respective offices. In certain towns it is proposed to introduce a collecting system, whereby regular daily calls will be made at business houses.

Motor Fuels other than Petrol

IN many parts of the world the joint dictates of safety, economy, and desire to use home-produced fuel, have resulted in efforts to exploit with commercial success motor fuels other than petrol. Certain of the thickly-wooded countries of central Europe have experimented with the use of a fuel gas derived from wood, and so far the results have proved sufficiently satisfactory that at present some 2,000 buses in Germany are run on wood gas. In Great Britain, apart from solitary experiments with compressed coal-gas, the only variant from petrol adopted by passenger vehicles within recent years has been diesel oil. Ministry of Transport returns show that from the inception of the oil engine in bus service up to September 30 of this year, the total number of oil-engined buses registered was 7,273. It would appear that Leyland Motors Limited has been responsible for the construction of very nearly half of these vehicles, for the company informs us that, during the same period, it had supplied to operators in Great Britain 3,077 oil-engined buses (i.e., 42 per cent.) and in addition had supplied upwards of 900 direct injection oil-engines for the conversion of existing petrol-engined buses of its own manufacture as well as those of several other manufacturers. Incidentally, these figures do not take into account the recent Leyland conversion orders for 148 oil engines from Glasgow Corporation, 64 from the Scottish Motor Traction group, and 12 for Preston Corporation.

Organisation of a Railway Company's Road Motor Engineer's Department—I

Details of the L.M.S.R. system with special reference to the vehicle repair depots in London and Birmingham

THE road motor services of a large railway are usually extensive, and some of their features may not be readily apparent to those not acquainted with this branch of railway organisation. The purchase, operation, and maintenance of a considerable fleet of vehicles incorporating several different types is involved, and the availability of adequate repair shop facilities in each district is a matter of primary importance. Specialised experience and methods are needed to deal with the many problems associated with the work of the department concerned, and an investigation of the subject provides much that is of interest.

By the courtesy of Mr. J. Shearman, M.I.Mech.E., M.I.A.E., Road Motor Engineer of the London Midland & Scottish Railway, we recently visited the company's road motor repair shops in London and Birmingham, where the organisation of the Road Motor Engineer's Department was explained to us.

The road motor fleet of the L.M.S.R. consists of some 3,287 motor vehicles and 2,130 trailers operating throughout the length and breadth of the system. The varied composition of this fleet, which includes vehicles from 5 cwt. to 25 tons capacity, tippers, livestock, tractors, and moving floor vehicles can be seen from the table on the following page, which represents the position as it was at the end of October, 1936. The fleet, of course, is continually expanding. In addition to this the department is also responsible for the maintenance of some 245 mobile petrol and compression - ignition engined appliances working for the Chief Engineer's department.

Control of this fleet is centralised in the Road Motor Engineer's offices at Euston, and the responsibility of the department includes the provision of vehicles in accordance with the requirements of the using department; registration and licensing of all road vehicles and trailers; complete inspection, maintenance and repair of all vehicles, of which more will be said later; requisitioning of stores and supervision of their consumption; provision and control of workshop accommodation, equipment and staff; arrangements for storage and distribution of fuel and lubricating oil; technical supervision, training and Ministry of Transport examination of motor drivers.

In order to decentralise the routine maintenance of the fleet, the area covered by the company's system is

divided into five sections (excluding Scotland) each in charge of a District Road Motor Engineer, with a main workshop placed conveniently near the majority of the vehicles in each area, as shown on the diagram on this page. Heavy repairs and overhauls



*Districts of the Road Motor Engineer's Department,
London Midland & Scottish Railway*

OUTPUT OF OVERHAULS

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5
ENGINES						
A BLACK						
B GREEN						
CHASSIS						
RED						

OUTPUT OF INSPECTIONS

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5
NO OF VEHICLES IN DISTRICT						
INSPECTION						
A BLACK						
B RED						
C GREEN						
TRAILERS						
YELLOW						

PERCENTAGE OF VEHICLES
OUT OF SERVICE

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5
GOODS						
BLACK						
PARCELS						
RED						

REPAIR COSTS

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5
AVERAGE						
MILEAGE						
PER						
VEHICLE						
PER						
ANNUUM						

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5
AVERAGE						
COST OF						
REPAIRS						
PER VEHICLE						
PER ANNUM						

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5
AVERAGE						
COST						
PER						
MILE						

222 are in service. The engine sprayers are cleaned and the lubricating oil changed at regular intervals, but the engines are not decarbonised nor are the valves ground until a mileage three times as great as that run by a petrol engine has elapsed. The interval between light and heavy engine overhauls is also correspondingly increased. Brake tests and a short road test are carried out after each inspection and the results recorded. Use is made in these tests of the well-known Tapley performance and brake test meters, which provide a ready standard of comparison free from the errors associated

FITTERS - RED

OVERTIME

LABOURERS - BLACK

WEEKDAYS

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5	20-6	18-7
HOURS								

PERIOD ENDING

SUNDAYS

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5	20-6	18-7
HOURS								

PARCEL VANS

PAINTING

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5	20-6	18-7
HOURS								

GOODS VEHICLES (BLACK) TRAILERS (YELLOW)

PERIOD ENDING	4-1-36	1-2	29-2	28-3	25-4	23-5	20-6	18-7
HOURS								

Above and left : District Road Motor Engineer's record chart

with the driver's judgment. Brake tests can also be conducted, by means of a Bradbury brake test machine without taking the vehicle out of the shop, and this proves particularly useful in equalising the brakes after overhaul.

Light engine overhauls are generally given about midway between heavy overhauls, and are designed to take advantage of the run-in conditions of the cylinders and bearings by fitting new rings to the pistons and taking up slack in the main and big end bearings. Heavy overhauls to the engine, chassis and bodywork are, as already stated, undertaken at the main district depots, and a certain amount of elasticity is permitted in deciding when they shall be carried out, varying conditions of service having a marked effect on the mileage at which they are necessary.

Reichsbahn Road Services Replace Light Railways

Regular passenger and goods facilities with motor vehicles have been substituted for the Kreuznacher Kleinbahnen

THE effective co-ordination of rail and road services in Germany in the hands of the Reichsbahn is exemplified by the recent replacement by passenger and goods motor services of the obsolete Kreuznach light railways system, and we are indebted to Dr. Tecklenburg, President of the Reichsbahndirektion Mainz, under whose supervision the changeover was carried out, for the following details and illustrations.

The Kreuznacher Kleinbahnen (Kreuznach Light Railways) were built about 40 years ago by the local authorities and comprised two lines, from Kreuznach to Winterburg 15½ miles, and Kreuznach to Wallhausen, 7½ miles, serving the district between Kreuznach and the Soonwald, with some 25 localities and 12,000 inhabitants, mostly engaged in agriculture, forestry, or wine production. The regular flow of traffic to and from Kreuznach, where the main lines pass, and the attractive nature of the country ensured plenty of passengers and goods in the earlier years, but, as with so many similar lines, the arrival of motor vehicles at length seriously impaired the fortunes of the undertaking. This was particularly the case in the area under consideration as the light railway gauge of 75 cm. (2 ft. 5½ in.) limited the maximum speed to 25 k.p.h. (15½ m.p.h.) and prevented the line from improving its services sufficiently to meet present day demands.

Of recent years, also, the rolling stock has been out of date, and a considerable sum would have been required to effect necessary improvements. The line passed through the streets of Kreuznach, in some places leaving only about 5½ ft. clear for other traffic, which was found increasingly inconvenient, especially as it was on the main road from Cologne and Mainz to Saarbrücken; the paving was also in poor condition. Since 1913 the passenger traffic had become halved, and goods traffic fallen to one fifth of its original amount, so that closure seemed inevitable.

About 1900 the lines had been taken over by the United Light Railways Co. of Frankfurt, on whom rested an



Sketch map of the Reichsbahn road services that have replaced the Kreuznach Light Railways

obligation to provide facilities until 1946, from which it could not obtain release without finding someone to provide equivalent alternative facilities. For goods traffic the use of lorries was naturally considered, but its separation from the passenger service was considered inadvisable. The Reichsbahn was approached and agreed to take over the concern and provide motor buses and lorries, with trailers, to perform the service, and the Minister of Transport having agreed to the closing of the line, the last train ran on August 1. Operation now comes under the Reichsbahn Division at Mainz, and already the services have been extended beyond the limits of the light railway, as shown on the accompanying sketch map, while a greatly improved timetable now applies. The illustrations on the opposite page show some of the Benz and Maybach diesel-engined buses that now maintain the passenger services, as well as a Reichsbahn lorry on regular goods service unloading at one of the roadside stopping points.

INTERNATIONAL CONTAINER BUREAU.—The International Container Bureau, founded under the auspices of the International Chamber of Commerce, held a two-day meeting in Paris on December 9 and 10. The meetings were attended by representatives of the International Union of Railways, the French, German, Italian, Rumanian, Hungarian, and Belgian railways, international organisations, constructors, users, and other interested parties.

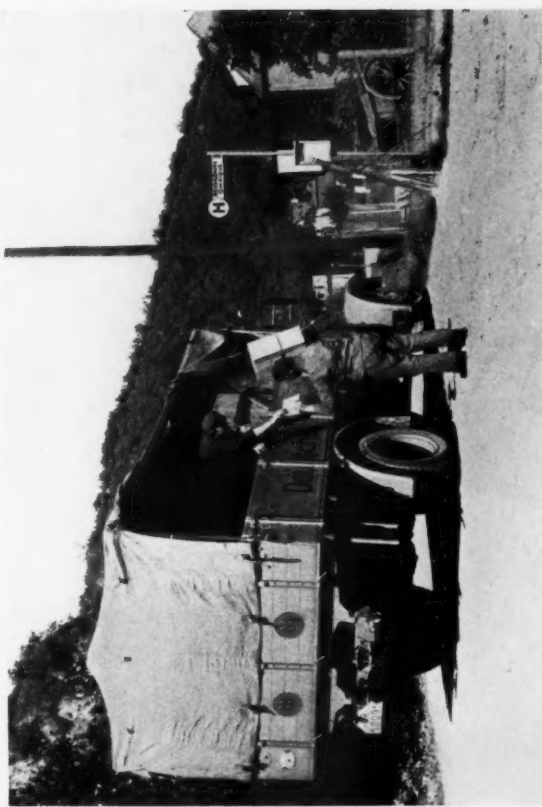
A number of commercial and technical questions were considered which had been placed on the bureau's agenda following the International Container Week held at Frankfurt-on-Main last April which was attended by 300 delegates from 23 different countries. The model tariff for container traffic established by the International Union of Railways on January 1, 1935, was examined, and amendments were proposed in order to secure the uniform

international rating of containers, and the application of the principle that the container should be rated according to the net weight of the goods carried and that empty containers should be transported free of charge. It was further decided to complete the existing model tariff so as to take account of the development of small container traffic. In view of the possibilities offered by the containers for the development of combined transport by rail, sea and inland navigation, the meeting also examined a number of technical factors connected with trans-shipment of the containers from one means of transport to another.

At a meeting of the executive committee, presided over by His Excellency Senator Crespi (Italy), Messrs. Cargardel (Directeur-Général, Compagnie Générale Transatlantique), and Korwick (General-Direktor of the Erste Donau-Dampfschiffahrtsgesellschaft), were elected to the committee.



The last journey on the narrow-gauge Kreuznach Light Railways, now replaced by buses and lorries



A goods lorry at a wayside halting place. The distinctive Reichsbahn bus-stop sign will be noticed at the top of a standard which also bears a timetable board



Reichsbahn buses with trailers that have replaced the Kreuznach Light Railways



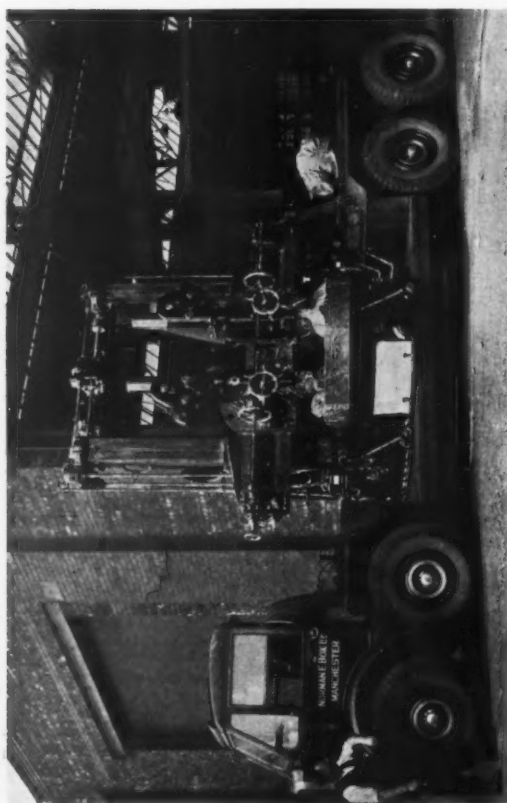
View in front of Bad Kreuznach station showing the Reichsbahn diesel-engined buses that now connect the Kreuznach Light Railways territory with the main-line railway



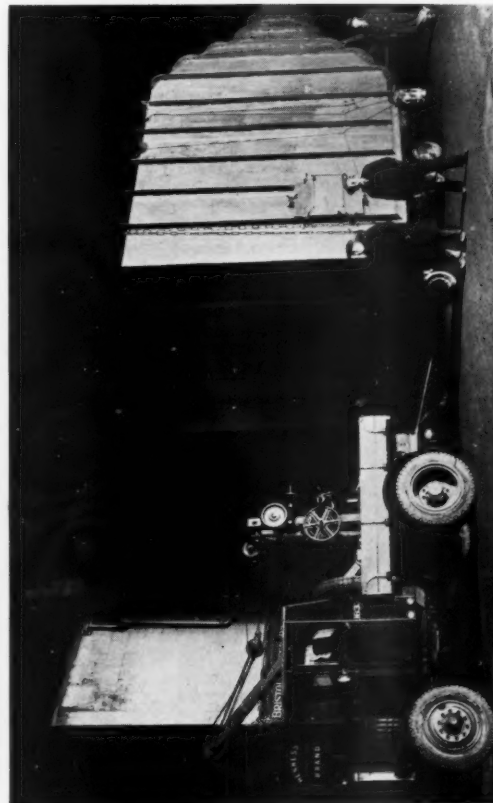
A heavy load on an eight-wheeled Scammell transformer float



A special A.E.C. rigid six-wheeled pneumatic-tyred lorry conveying a nine-ton diesel roller



Special A.E.C. 18-ton low-loading rigid eight-wheeler



A midnight move of a wind tunnel on a low-loading trailer drawn by a Scammell "locomotive" converted from a standard tractor

Pickfords Heavy Haulage Department

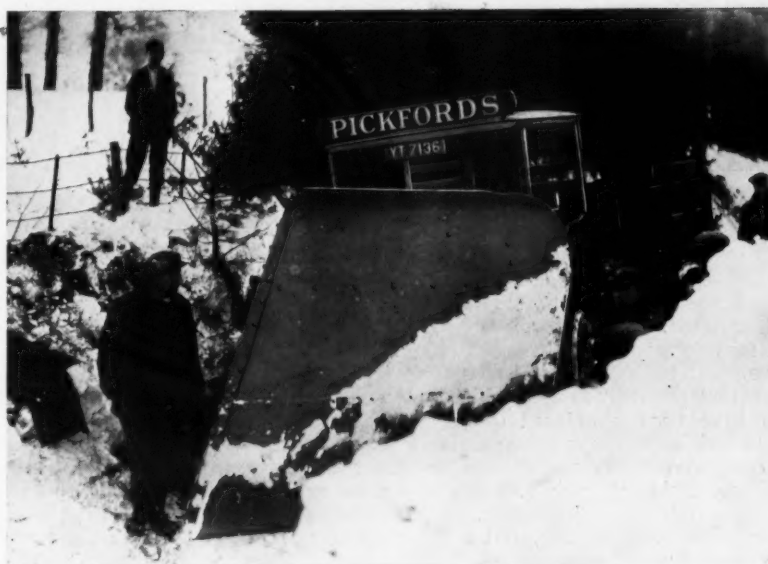
The haulage and handling of abnormal loads requires an experienced staff and a highly specialised and varied fleet of vehicles

THE Heavy Haulage Department of Pickfords Limited is a development of the firm's first mechanised section, which was built up very largely under the direction of the present General Manager. Today the department has its headquarters in Tower Bridge Road, London, and has branches and subsidiaries in Birmingham, Bristol, Leeds, Lincoln, Manchester, Coventry, and Sheffield. The work of the department extends over a wide sphere and involves the handling and conveyance of almost all traffic of abnormal dimensions, irrespective of weight or value, and also the dismantling and installation of heavy machinery. Thus the traffic handled has included large boilers, 137-ton stators, delicate apparatus such as the largest wireless valve in the world, the famous figure of Eros, and the entire equipment of a factory. A unique additional service is the provision of cross-country transport on caterpillar tractors, for such work as the delivery of cable in rural areas.

The carriage of these abnormal indivisible loads requires very careful preparation, and when a load has to be moved over a long distance it is not unusual for a number of the depots to be held responsible for the organisation of its passage through their areas. It is usual, however, for routing and all general preparations to be carried out by the depot in whose area the load originates. The principal depots—London, Birmingham, and Manchester—have their own staff for all running repairs and the manufacture of any special tackle which may be required. Pickfords Engineering Department (in London), however,

is responsible for complete overhauls, maintenance, and the supply and manufacture of vehicles and trailers.

The fleet of vehicles is both extensive and varied. For the heaviest work, for instance, there is a 32-wheeled steel-platformed trailer drawn by steam traction engines. This mammoth has 64 solid rubber tyres. For loads varying between 25 and 100 tons Scammell and other similar types, operating under Statutory Rules and Orders No. 1196, 1936, are used. The department also employs a large number of Fowler traction engines together with a variety of trailers, of capacities between 10 and 60 tons. Many



An improvised snow-plough fitted to one of Pickfords heavy haulage vehicles after a heavy snow storm



Carrying cable drums on caterpillar trailers across open country



Two Fowler traction engines drawing a 32-wheeled trailer, fitted with 64 solid rubber tyres, loaded with 137-ton stator

of these are designed for carrying specific loads, and some have been built by Pickfords Engineering Department. Petrol and diesel tractors are also used with trailers for lighter loads. Some of these—i.e., those not exceeding 20 tons in capacity—are now mounted on pneumatic tyres. In addition, some specially designed rigid 8-wheeled pneumatic-tyred vehicles of very low loading line have been introduced during the last 18 months. Thus Pickfords always has available machines capable of carrying almost any outside load, whatever its weight or delicacy, including such varieties as cranes, excavators, concrete mixers, compressors, boilers, bottle-washers, locomotives, transformers, steelwork, propellers, statues, and wind tunnels.

Pickfords also owns a large fleet of Ransome and Rapier petrol-electric mobile cranes. These are used largely for exhibition installations and factory removals. In the case of an exhibition, it is often necessary to move heavy machinery in a few hours, a task to which these cranes are particularly suited. The Pickfords organisation has established a reputation for this sort of work, and for the last ten years has been the principal contractor for the British Industries Fair. The firm is also the sole contractor to the Machine Tools Trades' Exhibition, the largest exhibition of heavy machinery held in this country. These cranes are

also employed on special work such as the placing in position of street lighting apparatus. For instance, the Pirelli-General Cable Works, Limited, has entrusted the lifting of the lamp standards for the Birmingham street re-lighting scheme to the Birmingham branch of the Heavy Haulage Department.

It often happens that the conveyance of a load is only a negligible part of the contract. In the removal of a complete factory from one side of a town to the other, for example, the heavy haulage contractor is required to arrange, in addition to transport, for the dismantling of the plant and its re-erection ready for operation again. The work, moreover, often has to be carried out without dislocating unduly the output of the factory.

The staff employed on this highly specialised service has been built up over a long period, and nearly all the charge hands and foremen spent their boyhood in the service of the company; indeed it has been found almost impossible for the staff to obtain the requisite experience outside the organisation to which they belong. Extensive surveys are frequently carried out by the department's area inspectors, and for this purpose and for the use of the company's technical representatives there is a large fleet of private cars.

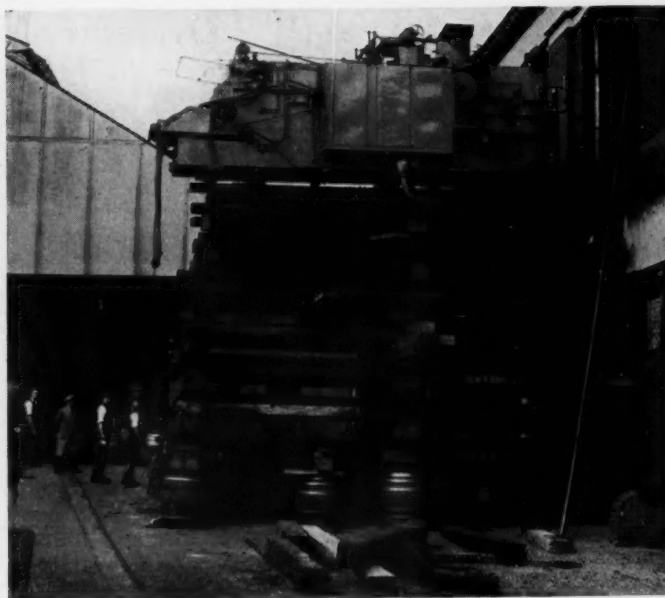
The scope of the Heavy Haulage Department is by no



A very large steam accumulator, weighing over 50 tons, in transit from Annan to Lancashire loaded on two 16-wheeled solid rubber-tyred trailers



A valuable piece of statuary being delivered into a London exhibition gallery



A large bottle-washing machine about to be moved into position inside a brewery 30 ft. above the ground

means limited to this country. It frequently happens that, although Pickfords Limited has agents in the principal Continental countries, requests are made that the company should supervise throughout the work of transporting some abnormal load to some destination abroad. Hence on several occasions a team of men from the Heavy Haulage Department has been required to travel to Paris and other large European cities to supervise the installation

of equipment of all sorts. As already indicated, standardisation of vehicles and equipment is impossible owing to the variety of the tasks set the Heavy Haulage Department. The accompanying illustrations, however, give some idea of the scope of its activities, and show different types of vehicle actually engaged in transporting loads which, by reason of the bulk or weight, have required specialised treatment.

Hereford Bus Station

Until about two years ago bus services terminating in Hereford used stands in the public streets. The arrangement was not entirely satisfactory to the Hereford City Council, and on January 2, 1934, it sanctioned a scheme put forward by the Roads Committee to use the site of the old gaol as a bus station. The work was carried out during the same year and the "Midland Red" Services (the Birmingham & Midland Motor Omnibus Co. Ltd.) now occupy two platforms as shown below. Parcels and other offices are rented. The subject of station arrangement is referred to in a note on page 1022.



"Midland Red" buses alongside the platforms at the bus station in Commercial Road, Hereford

Overseas Notes

Co-ordination in Queensland

The annual report of the Queensland Railways for the year ending June 30, 1936, says that throughout the year an endeavour has been made to bring about co-ordination of road and rail services for both passengers and goods, and a number of such road services has been established, principally, between Brisbane and places within 100 miles distance.

Door-to-Door in Argentina

In the annual report, to June 30, 1936, of the directors of the Buenos Ayres Great Southern Railway it is stated that a scheme is under consideration for a door-to-door service between Buenos Aires and the principal country centres, to be carried out in conjunction with the Expreso Villalonga company and it is hoped to present the scheme for Government approval as soon as permission has been granted to the railways to inaugurate door-to-door services. It is hoped that the scheme will assist towards enabling the railways to hold their own against the road haulier.

Rhodesia Road Legislation

From January 1, no public service vehicle will be allowed to operate on any road in Rhodesia without a permit from the Road Service Board, a public service vehicle meaning a motor vehicle ordinarily used for hire or reward for passengers or goods or both. No permit will be granted if two members of the board oppose the application, and permits are required to be renewed from year to year. It is a condition precedent to the granting of a road service permit that the fitness of a vehicle must first have been certified by an inspecting officer. The fact that there may already be a rail or road service operating along the route or in the area an applicant desires to serve will not be a good reason for refusing the issue of permits for the operation of further vehicles. In considering applications, however, the board is required to have regard to the type of vehicle, proposed route or area, applicant's character, financial stability, and the technical facilities available to him, timetables, fares, and tariffs, as well as employees' conditions of service.

Road Services of the Turkish State Railways

Plans are now in course of completion for the Turkish State Railways to organise regular bus and lorry services on newly-constructed roads in Asia Minor, on lines generally similar to those now in hand in Germany. The Turkish Government is anxious to improve roads in Asiatic Turkey to encourage the transport of goods by motor vehicle and thus speed up traffic and provide better communications in parts not served by railway. The new five-year plan provides in particular for an improvement of the roads leading from the ports to the interior of the country, and certain roads, similar to the special motor roads in other countries (such as *Autobahnen* and *autostrada*), are on the point of completion. Among them is one of special importance leading from Trebizond on



Road motor passenger bus for country services, South African Railways and Harbours

the Black Sea to the Persian border, an old caravan track now transformed into a road specially adapted for motor traffic. On this and other roads to be transformed regular motor lorry and bus services will be run, the organisation of which has been entrusted to the Turkish State Railways. The first regular service to be inaugurated, in the spring of next year, will be that between Trebizond and the Persian frontier (eventually to be extended into the interior of Persia). The budget of the Ministry of Labour provides funds to buy an initial fleet of 24 motor lorries, with as many trailers, and eight passenger buses. It appears, however, that these comparatively small numbers are not indicative of the intended strength of the fleet, for it is understood that the Turkish State Railways Administration will buy large numbers of buses and motor lorries out of its own funds in order to run services on other roads as they are finished. Naturally the placing of these operations in the hands of the Turkish State Railways will secure a large measure of co-ordination between rail and road services, but the potential market for vehicles is not limited to the purchases of the railway administration, for the new roads will be used also for the private transport of goods by motor lorry, and Turkish industrial enterprises may therefore be expected shortly to increase their purchases of motor vehicles.

Western Australia

Referring to the Transport Co-ordination Act which came into force in July, 1934, the report of the Western Australian Government Railways for the year ended June 30, 1936, says that although it is not claimed that all the substantial improvements in goods receipts over the past three years are due to the act, the fact that revenue in 1935-36 was £671,604 as compared with £406,759 in 1933-34 clearly demonstrates that considerable benefits have accrued. The report also records that it is the intention of the administration to extend its operation of trolley-bus vehicles. Tenders have been called for one complete unit, eleven chassis, and equipment for overhead lines and a substation.



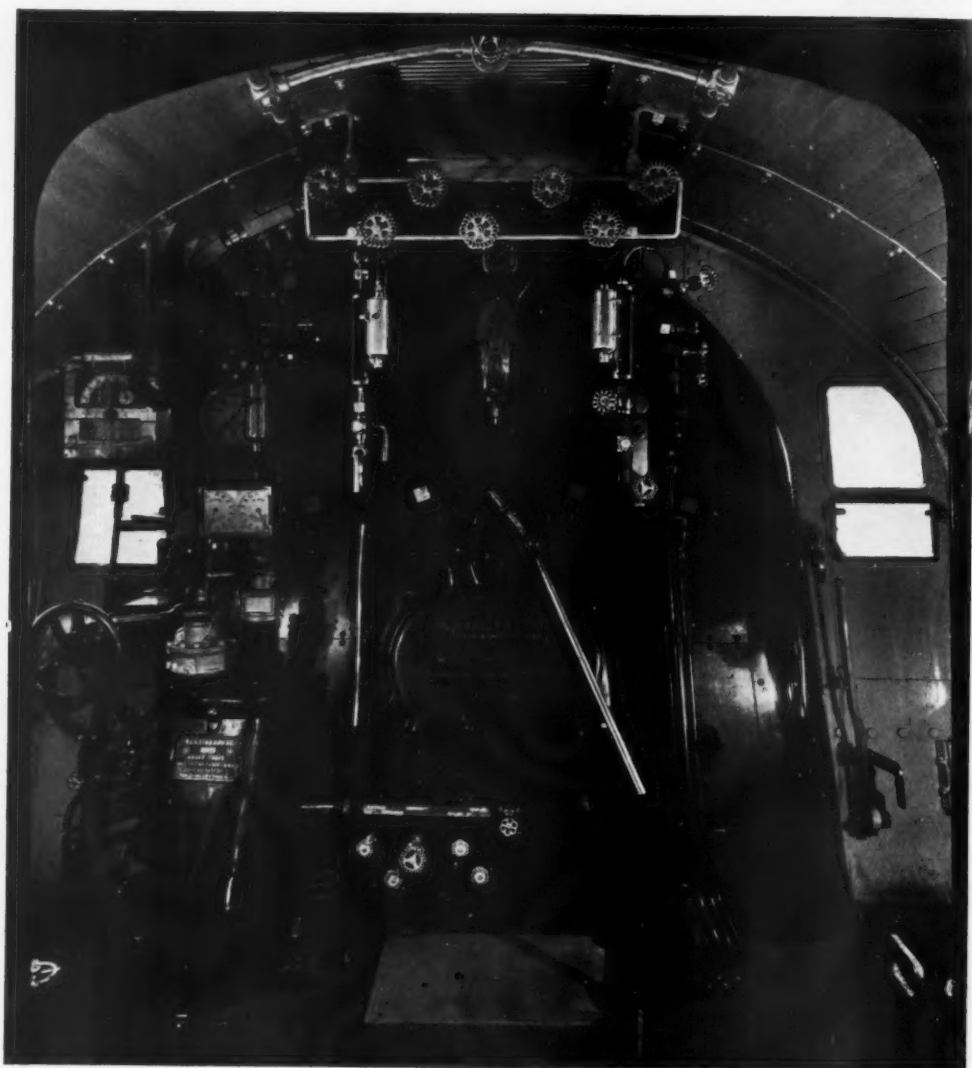
Derailed Flamingo express, Louisville & Nashville RR., near Cartersville, Georgia, in April, 1933. No passengers were killed, though the driver and fireman, and a man "catching a ride" lost their lives



Result of collision between a double-headed Pittsburgh-Philadelphia express and a goods train, Pennsylvania RR. No one on the train was killed, though three of the enginemen lost their lives

STEEL ROLLING STOCK IN REMARKABLE U.S.A. ACCIDENTS

(See editorial note on page 1013)



SOUTH AUSTRALIAN RAILWAYS STREAMLINED LOCOMOTIVE AND CENTENARY TRAIN
AND (BELOW) INTERIOR OF LOCOMOTIVE CAB

NEW STREAMLINED LOCOMOTIVES, SOUTH AUSTRALIAN RAILWAYS

Additional locomotives of this light 4-6-2 class have recently been placed in service

(See illustrations on opposite page)

ON page 1006 of THE RAILWAY GAZETTE for May 22 last, we published some particulars of the new streamlined locomotive and centenary train of the South Australian Railways. As was then stated, this is the first streamlined locomotive on the Australian continent and it is built of 95 per cent. Australian material. We are now enabled to reproduce a view of the interior of the cab showing the arrangement of the controls, and the impression is gained that there is ample space for the movements of the enginemen, whilst the general appearance is simple and orderly. Since our previous article was published, three additional engines similar to the pioneer one, have been built. These are fitted with Timken roller bearings on the leading truck and S.K.F. bearings on the tender as was the first of the series. It is however stated that seven further locomotives of the same kind are to be constructed but these will have S.K.F. bearings on the leading and trailing trucks and the tenders, so that, apart from the main coupled wheel bearings which are of the rotating bush type, the engines will be carried entirely on S.K.F. roller bearings.

The first engine, i.e., No. 620 *Sir Winston Dugan*, so

named after the Governor of South Australia, was shown at the South Australian centenary exhibition as a working exhibit, the coupled wheels being raised slightly from the rails and driven by an electric motor. The engine was illuminated at night by means of 20,000 candle power flood lighting and, being painted in hawthorn green and silver, the effect was naturally very striking. The ten locomotives referred to are being built at the Islington works of the South Australian Railways together with a number of modern steel passenger cars. These engines have cylinders 18½ in. in dia. by 28 in. stroke and develop a tractive effort of 25,000 lb. The all-steel boiler carries a working pressure of 200 lb. per sq. in. and superheated steam approximately 750 deg. F. distributed to the cylinders by superimposed piston valves actuated by Baker gearing. The fire-door is opened and closed by the fireman's foot pressure on a control. The tender carries 5,300 gallons of water and 9 tons of coal. The driving wheels have a diameter of 5 ft. 6 in. and the engine and tender weigh in working order 140 tons. The complete centenary train with locomotive 620 at its head is shown in the view reproduced opposite.

NEW BRITISH-BUILT DRILLING MACHINE FOR RUSSIA

THE machine we illustrate has been built by Kitchen & Wade Limited of Halifax to meet special requirements in Russia. A high output was demanded for the rapid drilling of the two driving holes in railway wheels and it was required that the machine should be capable of dealing with 30 wheels per hour. A two-station table is employed so that unloading and reloading can be done whilst another wheel is actually being drilled. The holes measure 50 mm. at approximately 22 in. centres, the material being particularly dense steel. The operation is intensified by the fact that the holes have to be drilled in the curved portion of the wheel centre. Loading is facilitated by four adjustable setting pieces which can accommodate varying sizes of wheels. Two of the pieces have quick clamping arrangements so that the gripping plates can be slipped aside without having to remove them. The revolving table is arranged on ball bearings with a jack arrangement to break the joint and to ensure easy turning.

The levers on the extreme left operate in conjunction with each other and are interlocked. One of them elevates and lowers the balanced jig and brings the hardened drill bushings down to the curved plate. Once this is down the table cannot be moved. When it is in its top position, the other lever comes into action and withdraws the setting plunger, and simultaneously brings the screw jack into action to allow easy rotation. The two drill heads are each driven by a 5-h.p. motor and have three independent speeds, whilst the feed mechanism is operated by separate motor, having three changes and feeding the two spindles simultaneously. All the necessary controls for operating the machine are placed at the left hand side, so that the operator has no need to leave his drilling



position. As will be seen, the machine is built on particularly robust lines, being thus suitable for unskilled operators. Hardened nickel chrome driving gears, ball bearing mounted and lubricated by internal oil pump are a feature of this machine.

THE KOWLOON-CANTON RAILWAY

(See Overseas letter on page 1020)

Right: Shum Chun local train entering Kowloon. Note the mountainous country in the background and the bluff on the left necessitating a tortuous approach to the terminus. This and the illustrations below give a good idea of the surroundings of Kowloon terminus



Left: Local train leaving Kowloon terminus, situated on the water front, whence a ferry service is maintained with the City of Hong Kong. This local service consists of eight trains each way daily and is worked by "A" class 2-6-4 or "B" class 4-6-4 tank engines



The Flying Eagle morning express from Canton entering Kowloon, hauled, as usual, by a "C" class 4-6-0 tender locomotive, having 21-in. × 28-in. cylinders, 6-ft. 0-in. coupled wheels, and 18½-ton axle loading

RAILWAY NEWS SECTION

PERSONAL

Sir Herbert and Lady Walker returned from their visit to South Africa on December 11.

Mr. G. Sutcliffe, who, as announced in THE RAILWAY GAZETTE of December 11, has been appointed District Superintendent, Cambridge, L.N.E.R., in succession to Mr. H. F. Sanderson



Mr. G. Sutcliffe,

Appointed District Superintendent, Cambridge, L.N.E.R.

(appointed District Goods Manager, Newcastle), entered the service of the former Great Northern Railway in 1900 at Deeping St. James. He was later transferred to Boston, where he became Chief Clerk to the District Superintendent, and in 1921 was appointed Stationmaster at Peterborough. In November, 1927, he was promoted to be Stationmaster at King's Cross, and at the end of 1930 became Assistant District Superintendent, King's Cross. It was in December, 1932, that Mr. Sutcliffe was appointed District Superintendent, Lincoln, whence he is now transferred to Cambridge in a similar capacity.

Mr. C. Mereuta, General Manager of the Roumanian State Railways, has retired, and has been succeeded by Mr. Macovei.

Sir Alexander Gibb, G.B.E., C.B., F.R.S., has been appointed President of the Engineering Section of the British Association for the ensuing year and meeting at Nottingham in September. Sir Alexander is senior member of

the firm of Sir Alexander Gibb & Partners, Consulting Engineers, Westminster.

Mr. George Alfred Read, of the management of Coast Lines Limited, has been appointed a Director of Railway Air Services Limited.

A donation of £200,000 for the erection of new buildings has been made to Leeds University by Mr. Frank Parkinson, Chairman of Crompton Parkinson Limited. He also recently instituted a special scholarship fund at this, his own university, with a gift of £50,000, for the cause of education in Yorkshire.

Mr. A. Doyle, Chief Clerk to the District Agent, Waterford, G.W.R., having retired after 47½ years' service with the company, was the recipient of a presentation, on December 7, made on behalf of the G.W.R., the Customs and the Veterinary staffs at Adelphi Quay, Waterford, by Mr. J. V. Beggs, District Agent, G.W.R.; it took the form of a radio set.

M. Fernand Chenaux has been appointed, subject to confirmation by the Federal Council, to succeed the late M. Edouard Savary as Manager of the First Division of the Swiss Federal Railways with headquarters at Lausanne. M. Chenaux was born in 1884, and worked for some years in the bridge construction section of Bell & Company's engineering works at Kriens, near Lucerne. He entered the service of the Federal Railways in 1907 as engineer at the headquarters of the former Second Division at Basle, was transferred to the First Division offices at Lausanne in 1911, and promoted Traffic Inspector in 1913. He has been Assistant to the Traffic Manager since May, 1932.

Sir Bernard E. Greenwell, Bt., and Mr. A. W. Bolden have joined the board of Davey, Paxman & Co. (Colchester) Ltd., in place of Messrs. F. Jarrett and J. D. Dean, resigned. Both Sir Bernard Greenwell and Mr. A. W. Bolden are well known in financial and railway circles. Sir Bernard is a Director of the Antofagasta (Chili) and Bolivia Railway Co. Ltd., and the Chilian Northern Railway Co. Ltd., whilst Mr. Bolden is Chairman of the Antofagasta (Chili) and Bolivia Railway Co. Ltd., Aguas Blancas Railway Company, Bolivia Railway Company, Chilian Northern Railway Co. Ltd., Nitrate Railway Co. Ltd., and a Director of the Lima Light, Power & Tramways Co. Ltd.

Mr. Harris Watson, M.B.E., A.M.Inst.T., A.M.Inst. Public Administration, who, as announced in THE RAILWAY GAZETTE of December 4, has been appointed to succeed Mr. A. R. Fearnley as General Manager of the Sheffield Corporation Transport Department, has been connected with that administration since 1899, and has held the position of Assistant General Manager since 1919. During the war



[Yates &]

[Henderson]

Mr. Harris Watson,

Appointed General Manager, Sheffield Corporation Transport Department

the Sheffield Corporation loaned Mr. Watson's services to the Admiralty, where he worked for two years on special work in London. He also served with the Admiralty Shipyard Labour Department and the Board of Trade Tramways Committee, and for his services in that connection was awarded the M.B.E. Mr. Watson is, moreover, Chairman of the special committee of the Municipal Tramways & Transport Association for ticket-issuing machines. The special significance of Mr. Watson's new appointment is that he will be in charge of the largest joint railway-municipal bus undertaking in Great Britain.

Sir John Hunter, K.B.E., formerly Chairman of Sir William Arrol & Co. Ltd., whose death we announced in our issue of October 23, left estate valued at £194,354.

Mr. E. Taylor, Chief Accountant of the L.M.S.R., has been re-elected Chairman of the Accountants' Standing Committee of the Railway Clearing House for the ensuing year; this will be his third successive year as Chairman.

Cecil Walter Paget

We regret to record the death at King's Newton, near Derby, on December 9, of Lt.-Col. Sir Cecil Walter Paget, Bart., C.M.G., D.S.O., M.I.Mech.E., late R.E., who retired from the position of General Superintendent of the former Midland Railway in April, 1919. Born in October, 1874, he was latterly the only surviving son of Sir Ernest Paget, Bart., Director, and for many years Chairman, of the Midland Railway Company. Mr. Paget was educated at Harrow, and in 1891 commenced an apprenticeship in the Midland Railway works at Derby. On completion of a systematic training in all departments he was appointed Inspector of locomotives under construction for the company by various makers, including inspection of those built by the Schenectady Locomotive Works, U.S.A., in 1899. He had previously made a visit to the United States, wherefrom he had obtained considerable knowledge of American methods.

Returning to England he became Assistant to Mr. R. M. Deeley in the supervision of boilers and electric motors at Derby works. In 1900 Mr. Paget had charge of the Midland Railway exhibit at the Paris Exhibition of that year, and during his stay in the French capital he prepared reports upon the various exhibits and engineering methods in France, and upon the working of de Glehn compound locomotives, then attracting special attention on French lines. Leaving the Midland service temporarily, Mr. Paget went to Cambridge for a course of study in electricity and theoretical aspects of mechanical engineering, and on his return to Derby went to America with Mr. Deeley to examine and report upon workshop methods there. In June, 1902, Mr. Paget became Assistant Works Manager at Derby, and Interim Works Manager when Mr. Deeley was appointed Assistant Locomotive Superintendent, receiving the substantive appointment when Mr. Deeley succeeded Mr. S. W. Johnson in charge of the Locomotive Department.

In October, 1904, Mr. Paget became Assistant Locomotive Superintendent, until in April, 1907, under the re-organisation scheme, he was appointed General Superintendent, covering all sections of traffic operation, including the control of locomotives and rolling stock in service and other sections associated with traffic working. Mr. Paget's most important work as General Superintendent was on the conception, installation, and working of the control system of operation. The

work was started in 1908, and the first controls opened in 1909. He was responsible for many developments in traffic working which became characteristic of Midland practice.

Mr. Paget joined the Royal Naval Air Service in October, 1914, and was attached to the Armoured Car section, but in the following February he was

enterprises. For several years he took an active part in the management of a Sheffield steel firm, Steel, Peech & Tozer. He succeeded his father in the Baronetcy in 1923.

Three Appreciations

Sir Cecil Paget, Bt., at the comparatively early age of 62, has passed away, but if the amount of work he did and the pace at which he worked could be translated into years he would most certainly have a record far in excess of the allotted span of life. Viewed from any and every angle he was an extraordinary man, one prepared to give whatever time and energy that might be necessary to produce efficiency. His standard was high, and to work with him was an inspiration, and I question if ever there was his equal in the way of encouraging a man in his work, and more generous in his appreciation of the efforts of his staff.

My first intimate contact with him was upwards of 40 years ago; he was then, in connection with his engineering training, carrying out a course of firing. He created prominence for himself and gave indication of his character and thoroughness even in performing what may be considered an ordinary job, using all his spare time polishing the brass work and other controls on the footplate, the result being so outstanding as to attract attention, and although this in itself may be a small thing it indicates the characteristics of the man. The big things he did are well known, workshop organisation, and afterwards the many institutions he created in connection with the operating of railways—under the heading of traffic control.

When Sir Guy Granet became General Manager of the Midland Railway he was not content with the operating results, and indeed it was obvious that more modern methods had to be adopted, and but for this vision on the part of Sir Guy and the ways and means which Sir Cecil provided to meet the needs, it is certain that the traffic, particularly during the war period, could not have been given a railway service equal to the demand. The railway operating experience he had acquired was applied to the needs of transport for the British Army during the great war, and when the Railway Operating Division was formed with the British Army in France he was appointed Commanding Officer, and no one made greater sacrifices than he in volunteering his services to his country.

In domestic life he will be greatly



Lt.-Col. Sir Cecil Walter Paget, Bt., C.M.G., D.S.O., M.I.Mech.E.

transferred to France as Deputy Assistant Director of Railway Transport. Three months later he was selected to form the Railway Operating Department and was given the rank of Lt.-Col. of the Royal Engineers. His command of the R.O.D. continued throughout the remainder of the war, and during that period the strength of the department rose from 3,000 to 20,000 men. He received the D.S.O. in 1916, the C.M.G. in 1918, and was mentioned in despatches by Viscount French and Sir Douglas Haig. He was also decorated with the order of *Officier Legion d'Honneur* and as an *Officier Ordre de la Couronne*, and was a member of the Institution of Mechanical Engineers.

Soon after his return from the war, in April, 1919, he resigned from his position as General Superintendent of the Midland Railway, and since then interested himself in various commercial

missed, his missions to sick and needy, notwithstanding his attempt to conceal them, were almost legion.

J. H. FOLLOWS

Although a member of a generation younger than that to which Colonel Sir Cecil Paget belonged, yet it is 25 years since I first met and worked under him. I have therefore been privileged to appreciate his various qualities which made themselves apparent before, during and after the great war.

Of these, the qualities of brilliance and generosity seem to stand out as the most exceptional.

That rare gift, a brilliant mind, which in his case included such widely different characteristics as the love of accurate detail necessary to the engineer and the vision of an artist, found it difficult, particularly in this country, to fit in with the largely traditional views of the average mind, with the result that one cannot help feeling that much of Colonel Paget's brilliance was not utilised.

During the war, the "boss," as he was affectionately known to those, like myself, who served under him, obtained the respect of many Frenchmen, largely through his brilliance. But it was after the war that his great generosity manifested itself, and it would be hard to count the number of ex-Service men, for the most part, who owe their present position almost entirely to his practical efforts and assistance.

He had a great facility for enjoying the company of men younger than himself, and it is largely for this reason that so many of my generation will feel that they have lost not only a fine leader, but a grand "mate" (to use his own expression), and one who was never failing in kindness, courtesy, humour, and good-comradeship.

CUTHBERT GRASEMAN

Cecil Paget joined the Armoured Car Section of the R.N.V.R. in November, 1914, and was transferred to the War Office and thence overseas to the Director of Railway Transport as A.D.R.T., France, in December, 1914. In the spring of 1915 Paget was given the rank of Lt.-Colonel and appointed to command in France the Railway Operating Division which was being formed in England under the direction of General Sir Osborne Mance, Director of Movements at the War Office, and Sir Francis Dent, General Manager of the South Eastern & Chatham Railway.

Colonel Paget established the first companies of railway troops that arrived in France at Pont d'Ardes in a sugar factory, with the object of getting into repair a number of Belgian locomotives that had been handed over by the Belgian Government to the British troops and which were in much need of overhaul. Apart from the docks in the Port of Boulogne, the first railway line operated by British troops was in October, 1915, when the section

Hazebrouck to Poperinghe and Ypres was taken over from the French. Other railway lines in the forward areas soon followed. In the spring of 1916 the line from Candas to Albert and the various lines in the Valley of the Somme were also taken over, followed in 1917 by Hazebrouck to Strazeel, Bailleul, and Armentières, with their branches, Bergues to Poperinghe and Ypres; Boisieux to Cambrai; Achiet to Velu; and Amiens to Peronne.

In addition to the above lines in the forward areas, the main lines of the Nord Railway recaptured from the Germans were operated by British Railway troops under the command of Lt.-Colonel Paget. A number of ports, such as Boulogne, Dunkirk, Rouen, and the ammunition and other depots at numerous points, i.e., Audruicq, Blangy, Rouxmesnil, Abbeville, &c., were also operated by men of the Operating Division.

Colonel Paget used as his headquarters a mobile train which he moved to the various points in the different army areas. He was always to be found in a particular sector prior to an attack by the allies as his Division served both the French and British armies. Paget went to France with a reputation as an organiser. His system of train control was known throughout the world and he adapted his control system to suit war conditions. Every area had its control centre and elaborate system of telephones. He claimed to have the best system of telephones in France, installed by Major Hill of the Signals.

The Railway Operating Division establishment in 1918 consisted of over 22,000 officers and men, with 2,700 locomotives, and was operating over 2,000 miles of railways. His method of train operation was simple—based on the existing French regulations. Every train entering a section, the driver was provided with a train order in English and French, owing to the fact that French and Belgian drivers were operating over the same lines. It was his proud boast that the railway troops operating throughout France and Belgium had never killed a soldier due to a collision.

Colonel Paget spoke French fluently and was very popular with the allied officers. General Maurier, head of the Inter-Allied Transport Commission, was one of his many admirers. At a meeting at French G.H.Q. when some doubt was expressed by the French general staff as to whether the British railway troops could carry out a difficult strategic move, General Maurier interrupted the conference with this remark: "Si Le Colonel Paget me dit qu'il peut le faire il le fera," and needless to say what was required was done, to the satisfaction of the general staff.

Paget was at his best in a difficult situation, a born leader who inspired his subordinates with confidence; generous to a fault and incapable of doing a dishonest action. Somewhat out-

spoken, he never let a subordinate down and for that reason all of those who were privileged to serve under him had confidence in him. The success attained by the Railway Operating Division in France and Belgium was entirely due to the organising abilities of its Commander and the excellent example he set his officers and men all contributed to the efficiency of the Division under his command. He will be sorely missed by a host of friends and the world will be the poorer by his passing.

[This third appreciation of the "boss," as he was known to those intimately connected with him during the war, has been written by one who was his closest friend for 42 years.]

The Funeral

There was a large attendance at the funeral service at St. Andrew's Church, Derby, on Monday, of Sir Cecil Paget. The coffin was shrouded in a Union Jack, and bore a velvet cushion on which were pinned Sir Cecil's decorations; these included the Order of Commander of St. Michael and St. George, the Distinguished Service Order, Officer of the Legion of Honour, Officer of the Crown of Belgium and the 1914 War Medal.

Family mourners were:—

Lady Paget (widow), Col. A. Tilney and Mrs. Tilney, Dr. and Mrs. Eric Fletcher; Messrs. R. A. and E. V. Tilney and Mr. Sidney Bull. Others present included the Countess of Mar, Col. J. D. Kerr, Mr. and Mrs. J. H. Follows, Major and Mrs. R. H. T. Turner, Mr. C. N. Mansfield (representing Mr. Ashton Davies), Mr. W. N. Bancroft (former Secretary of the Midland Railway), Capt. and Mrs. G. S. Bellamy, Capt. and Mrs. L. Trevor Jones, Lt.-Col. and Mrs. H. Rudgard, Mr. H. F. Loney, Lt.-Col. N. Clowes, Capt. C. Grasmann (Public Relations and Advertising Officer, Southern Railway), Dr. W. St. A. St. John, Major F. H. Sutherland (Chief Mechanical Engineer's Department, L.M.S.R., Derby), Mr. H. K. Beale, Major and Mrs. J. N. D'Arcy Clark, Mr. L. Cecil Geach, Lt.-Col. C. C. Herbert-Stepney, Capt. R. S. Hilton (representing the United Steel Companies Limited), Mr. A. E. Fawcett, Mr. E. L. Adams (Traffic Manager, Staveley Coal & Iron Co. Ltd.), Mr. C. D. Legge, Mr. Albert E. Andrews, Mr. Ronald Leslie (London Manager and Secretary, Central Argentine Railway), Mr. E. L. Haworth (Director, McCall & Company, Sheffield), Capt. S. E. Bower, Mr. Samuel Bower (former Chief Accountant, Midland Railway), Mr. W. Barker (representing Mr. J. Dixon and Mr. H. B. Everard, District Engineers, Derby North and Derby South, L.M.S.R.), Mr. J. W. Palmer (former Stationmaster, Derby), Mr. A. Marston (present Stationmaster), Messrs. A. Mathers and W. Richardson (Swindon), Mr. W. J. Blake (L.M.S.R. Welfare Supervisor, Derby), Mr. R. Paterson (Assistant District Goods and Passenger Manager, Derby), Mr. Alfred Tatlow (ex-Assistant to the Chief General Superintendent, L.M.S.R.), Mr. E. Wadsworth (Chief, Divisional Trains Office, Derby), Mr. R. Islip, Mr. W. H. Golding, Mr. T. Frost, Mr. G. Margetts, Mr. J. Broughton, Messrs. J. Waters and A. Cottrell (Divisional Control Office, Derby), Messrs. E. R. Beesley, W. Arnitt, Alfred Daykin, J. H. Fletcher, A. Edwards, A. Rapps, S. Fletcher, H. A. Mitchell, and V. H. Hawkes. Mr. K. R. N. Speir, Assistant Commercial Manager (Continental), L.M.S.R., was unavoidably absent, having only returned from America on Monday evening.

Many other public bodies in Derby and the district were represented, and a large number of members of the Derby Railway Veterans' Association attended.

Sir Cecil Paget was buried in the little churchyard at Sutton Bonnington, near Kegworth.

The Down Special T.P.O., London to Aberdeen

(See editorial notes on page 1012)

In the interesting paper which Mr. J. J. C. Rowden, Chief Superintendent, Travelling Post Offices, G.P.O., gave on December 3 to the Railway Students' Association (see THE RAILWAY GAZETTE, December 11, page 988), he followed his general exposition of the T.P.O. service with a brief account of the operations of the Down Special.

The Down Special T.P.O. (London to Aberdeen), and the corresponding Up Special T.P.O. (Aberdeen to London), are the largest T.P.O. trains in the world. Both trains are run specially for the Post Office, and are devoted solely to Post Office business. The Down Special T.P.O. leaves Euston at 8.30 p.m. and arrives at Aberdeen at 7.52 a.m., the journey being thus performed in less time than is taken by the fastest passenger train to Aberdeen. Eight stops are made, namely, at Rugby, Tamworth, Crewe, Preston, Carlisle, Carstairs, Stirling, and Perth. Apparatus is worked at 32 stations, as shown on the accompanying timetable, from which it will be seen that the first apparatus station worked is Wembley at 8.43 p.m., or only 13 min. after leaving Euston, and that the last, is at Stonehaven, at 7.32 a.m., but 20 min. before Aberdeen is reached.

On leaving Euston the train consists of thirteen vehicles, namely, one stowage van each for Liverpool, Manchester, Preston, and Stranraer; two sorting carriages, two stowage vans, and an apparatus van for Aberdeen; and three sorting carriages and a stowage van for Glasgow. Eight vehicles, for Aberdeen and Glasgow, are gangwayed throughout, giving through access to the staff en route.

Letters received in the T.P.O. at Euston and at appropriate points down the line connect with the first delivery the next morning at every place in the Midlands, the North of England, North and Central Wales, part of South Wales, the area from Birmingham to Bristol and the southern half of Scotland. Letters for the northern half of Scotland and for Ireland connect with the next deliveries. The stowage vans on the T.P.O. convey direct mails for provincial offices, the bags being loaded and grouped in the vans according to the station of despatch.

Over the earlier part of the journey the T.P.O. naturally receives very many more mails than it despatches, but, as the journey proceeds, the balance between receipts and despatches alters until the despatches outnumber the receipts. At Euston station the staff begins duty at 7.15 p.m., an hour and a quarter before the train leaves. During that time mails arrive by road vans in an almost continuous stream from London sorting offices and from provincial offices via

other London terminal stations. They are divided into groups on the platform, and loaded into the appropriate vehicles of the train.

At Rugby, the first stop (at 10.4 p.m.), mails are received in the T.P.O. from post offices in Norfolk, Suffolk, Cambridgeshire, Lincolnshire, Northants, Buckinghamshire, and Rutland. Despatches are made from the T.P.O. to Birmingham, Rugby, Coventry, Leicester, and other offices. A despatch is also left behind at Rugby station to be taken up by the Irish Night Mail which follows behind the Down Special T.P.O. from London to Crewe. Tamworth is the next stop (10.40 p.m.), and here connection is made with the Midland T.P.O., which runs between Bristol and Newcastle-on-Tyne in both directions. Mails are also despatched to the Tamworth-Lincoln T.P.O., Derby, Nottingham, &c., and received from the Lincoln-

SCHEDULE OF DOWN SPECIAL (EUSTON-ABERDEEN) T.P.O.

Note.—On Saturday night and Sunday morning there are certain slight variations in the stops and timings shown below.

			p.m.
EUSTON	...	dep.	8.30
Wembley	...	...	8.43
Harrow	...	...	8.46
Watford	...	...	8.54
Hemel Hempstead	...	...	9.1
Berkhamsted	...	...	9.6
Tring	...	...	9.12
Leighton Buzzard	...	...	9.18
Bletchley	...	...	9.26
Blisworth	...	...	9.42
RUGBY	...	arr.	10.4
	...	dep.	10.8
Nuneaton	...	...	10.25
TAMWORTH	...	arr.	10.40
	...	dep.	10.47
CREWE	...	arr.	11.44
	...	dep.	11.59
		a.m.	
Warrington	...	...	12.26
PRESTON	...	arr.	1.0
	...	dep.	1.10
Lancaster	...	...	1.32
Camforth	...	...	1.38
Penrith	...	...	2.33
CARLISLE	...	arr.	2.53
	...	dep.	3.3
Beattock	...	...	3.47
CARSTAIRS Jc.	...	arr.	4.32
	...	dep.	4.36
Carlisle	...	...	4.47
Coatbridge	...	...	4.59
Carmuir Jc.	...	...	5.15
Larbert	...	...	5.16
STIRLING	...	arr.	5.25
	...	dep.	5.29
Blackford	...	...	5.47
Glencagles	...	...	5.50
Dunning	...	...	5.54
Forquardenny	...	...	6.1
PERTH	...	arr.	6.7
	...	dep.	6.13
Stanley	...	...	6.22
Coupar Angus	...	...	6.30
Alyth Jc.	...	...	6.35
Forfar	...	...	6.47
Bridge of Dun	...	...	7.3
Dubton	...	...	7.7
Laureneekirk	...	...	7.17
Fordoun	...	...	7.20
Stonehaven	...	...	7.32
ABERDEEN	...	arr.	7.52

* Indicates that mails are received and/or despatched by apparatus without stopping. Stopping stations are shown in capitals.

Tamworth T.P.O., Leicester, Derby, Lincoln, and other places.

The next stop is at Crewe, the largest T.P.O. junction station in the country, and on arrival here the platform holds a long line of barrows loaded with mails for the Down Special. These mails, which have reached Crewe by other T.P.O.'s and by ordinary trains are already divided into groups for the different carriages and the barrows stand at the points where it is known that each carriage will stand when the train arrives. Before the waiting mails are put on board, those despatched from the T.P.O. are unloaded, and postmen are ready to transfer them to other trains and other T.P.O.'s. The bags are unloaded in specified groups according to destination, in order to ensure smooth working at the station.

Mails are despatched from the Down Special at Crewe for offices in Lancashire, Yorkshire, Cheshire, Staffordshire, North Wales, and Ireland, for Cardiff, Shrewsbury, Hereford, Wolverhampton, &c. Despatches are also made to T.P.O.'s which start from or pass through Crewe, namely, the London-Holyhead T.P.O. (Irish Night Mail); Crewe-Cardiff T.P.O.; Crewe-Birmingham T.P.O.; Shrewsbury-York T.P.O.; York-Shrewsbury T.P.O.; and Up Special T.P.O.; also to the Shrewsbury-Aberystwyth sorting carriage and the Portadown-Derry T.P.O. for conveyance to those T.P.O.'s via Shrewsbury and Holyhead, respectively.

Some of these T.P.O.'s connect at the end of their journeys with yet other T.P.O.'s. For example the Crewe-Birmingham T.P.O. connects at Birmingham with the Midland T.P.O. on its way from Newcastle to Bristol. At Bristol the Midland T.P.O. connects with the Bristol-Plymouth T.P.O.

Mails are received in the Down Special at Crewe from Birmingham, Crewe, Liverpool, Manchester, Chester, Leeds, Sheffield and a number of other offices, and correspondence posted in the whole area from Cornwall to Crewe, and in the whole of Wales, is received in mails from the Plymouth-Bristol T.P.O.; Midland T.P.O.; Birmingham-Crewe T.P.O.; Aberystwyth-Shrewsbury sorting carriage; Cardiff-Crewe T.P.O.; Shrewsbury-York T.P.O.; and Bangor-Crewe T.P.O.

Some of the London staff leave the Down Special T.P.O. at Crewe and return to London in the Up Special T.P.O. reaching Euston at 3.55 a.m. The accommodation left vacant by the departure of these men is taken over by men who have worked up from Glasgow to Crewe the previous night and are now returning from Crewe to Glasgow.

The stowage vans from London for Liverpool and Manchester are detached from the front of the train at Crewe, and while this is being done vans from Birmingham to Glasgow and Birmingham to Edinburgh are attached in the rear.

Preston is the next stop, and here the stowage van from London to Preston is detached, to be unloaded after the departure of the T.P.O. Mails are received from and despatched to appropriate offices, and mention may be made of the receipt of bags of newspapers from the Manchester publishing offices of five daily newspapers, containing the editions of the morning after the T.P.O. left London.

Carlisle is reached at 2.53 a.m., and more than half the journey is done. Mails are despatched here to Northern Ireland (via Stranraer and Larne); Carlisle and other places in Cumberland; the Carlisle—Ayr T.P.O.; the Carlisle—Edinburgh T.P.O.; the Carlisle—Stranraer T.P.O.; and to a number of offices in the south of Scotland. Mails are also received from various offices in the north of England.

The remainder of the London staff leaves the T.P.O. at Carlisle and stays there until the next period of duty, that is, the return journey to London in the Up Special T.P.O. leaving Carlisle at 9.5 p.m. and reaching Euston at 3.55 a.m. From Carlisle to Aberdeen the Down Special T.P.O. is staffed by officers from the Carlisle and Aberdeen offices.

The Stranraer stowage van is detached at Carlisle, to proceed to its destination on the Carlisle—Stranraer T.P.O. train, and two carriages, known as the Carlisle—Edinburgh T.P.O., are attached. The train then consists, on leaving Carlisle (at 3.3 a.m.), of three sections: First, the Down Special T.P.O. proper, for Aberdeen (five vehicles); second, the Glasgow portion (five vehicles); and, third, the Carlisle—Edinburgh T.P.O. for Edinburgh (three vehicles). These three sections run together to Carstairs, the next stop beyond Carlisle, and then part company, the Down Special proceeding north to Aberdeen, the Glasgow portion west to Glasgow, and the Carlisle—Edinburgh T.P.O. east to Edinburgh. Connection is made at Perth with the Highland T.P.O. which runs from Perth to Helmsdale via Inverness. Aberdeen, the end of the journey, is reached at 7.52 a.m.

GREAT EASTERN MECHANICS' INSTITUTE PRIZE DISTRIBUTION.—Mr. William Whitelaw, Chairman, L.N.E.R., presented the prizes to the students of the Great Eastern Mechanics' Institute at the Town Hall, Stratford, on December 9. The Mayor of West Ham presided. In addition to the Bishop of Barking and Sir Gerald Talbot (Director, L.N.E.R.), there were among those present the following L.N.E.R. officers: Mr. H. W. J. Powell, Estate and Rating Surveyor; Mr. A. H. Peppercorn, Assistant Mechanical Engineer, Stratford; Mr. T. H. Turner, Chief Chemist and Metallurgist; Mr. L. P. Parker, District Locomotive Superintendent, Stratford; and Mr. T. H. Seaton, District Engineer, Stratford.

Closed Branch Lines—VI

Irish Railways (other than Great Southern)

Section of Line (5-ft. 3-in. gauge, unless otherwise noted under Remarks)	Passenger service withdrawn	Section completely closed	Remarks.
G.N.R. (1)			
Keady to Castleblayney ...	—	April, 1923 ...	—
Armagh to Keady ...	February, 1932 ...	—	—
Markethill to Armagh ...	—	February, 1933 ...	—
Goraghowood to Markethill ...	February, 1933 ...	—	—
Dromin junction to Ardee ...	June, 1934 ...	—	—
L.M.S.R. (N.C.C.)			
Portstewart station to Portstewart town	—	January 1, 1926 ...	Steam operated tramway.
Magherafelt to Draperstown ...	October 1, 1930 ...	—	—
Ballyboley to Doagh ...	October 1, 1930 ...	—	3-ft. gauge.
Ballymena to Parkmore ...	October 1, 1930 ...	—	3-ft. gauge.
Limavady to Dungiven ...	January 1, 1933 ...	—	—
Larne Harbour to Ballymena ...	January 31, 1933 ...	—	3-ft. gauge. Passenger service not resumed after strike of January 31 to April 10, 1933.
LONDONDERRY AND LOUGH SWILLY			
Tooban Junction to Buncrana ...	December 2, 1935	—	3-ft. gauge.
Buncrana to Carndonagh ...	—	December 2, 1935	3-ft. gauge.
CASTLEBERG AND VICTORIA BRIDGE			
Castleberg to Victoria Bridge ...	—	April 17, 1933 ...	3-ft. gauge.
DUBLIN AND BLESSINGTON			
Terenure to Blessington ...	—	December 31, 1932	Steam tramway, mainly on public road.
BLESSINGTON AND POULAPHOUCA			
Blessington to Poulaphouca ...	—	September 30, 1927	Steam tramway on public road.

Closed Branch Lines—VII

Minor Railways in Great Britain

Railway	Section of Line (4 ft. 8½ in. gauge unless otherwise noted under Remarks)	Passenger Service Withdrawn	Section Completely Closed	Remarks
Bishop's Castle	Stretford Bridge Junc. (near Craven Arms) to Bishop's Castle	—	April 20, 1935 ...	Whole line abandoned.
Campbeltown & Machrihanish Light	Campbeltown and Machrihanish	—	Autumn, 1932 ...	2-ft. 3-in. gauge. Line dismantled.
Derwent Valley Light	York (Laythorpe) to Cliff Common (near Selby)	September 1, 1926	—	—
East Kent Light ...	Eastray to Sandwich Road	—	October 31, 1928	—
Glyn Valley Tramway	Chirk to Glyn Ceiriog	April 6, 1933 ...	July 6, 1935 ...	2 ft. 4½ in. gauge. Whole line abandoned.
Nidd Valley Light (Bradford Corporation)	Pateley Bridge to Lofthouse	December 31, 1929	—	Whole line abandoned in 1936.
Oxford and Aylesbury Tramroad	Quainton Road to Brill	—	December 1, 1935	Worked by the Met. & G.C. Jt. Committee.
Sand Hutton Light Compulsory Winding-up Order, October 24, 1932.	Warthill to Bos-sall	—	1932 ...	1-ft. 6-in. gauge. Whole railway abandoned.
Shropshire & Montgomeryshire Light	Shrewsbury to Llanyrnnech Kinnerley Junc. to Criggon	November 6, 1933	—	—
West Sussex ...	Chichester to Selsey	—	January 19, 1935	Whole line abandoned.
Southwold ...	Halesworth to Southwold	—	April 12, 1929 ...	3-ft. gauge. Whole railway abandoned.

The Efficiency of Locomotive Furnaces

(See editorial note on page 1013)

On November 25 a paper entitled "Some Measurements by Gas Analysis, of the Efficiency of the Locomotive Furnace" was read by Dr. P. Lewis-Dale, Ph.D., F.I.C., before the members of The Institute of Fuel. This was an account of experiments initiated by the Advisory Committee for Scientific Research of the London Midland & Scottish Railway and conducted on that line with locomotives of different types. Arrangements were made to measure while the locomotive was actually hauling a train (1) the heat loss in the dry exhaust gases; (2) the heat loss represented by the evaporation of water in the fuel and air; (3) the loss of available energy due to the formation of carbon monoxide; (4) the loss of available energy due to the ejection of solid unburned particles of fuel; (5) the loss of available energy due to the exhausting of unburned hydrogen; (6) the heat loss due to radiation.

Apparatus Used

In some experiments conducted in 1907 by Brislee an attempt was made to ascertain the losses due to incomplete combustion by using the Orsat type of gas analyser. This method gave indications at intervals far too infrequent, and, in the new experiments, gas analysers giving continuous indications by pointers were used, and these were read every minute. The action of these was dependent on differences between the thermal conductivities of the different gases in the exhaust. Two sampling pipes were arranged to take in exhaust gases from the smokebox at a point about 15 in. in front of the tube plate. A steam ejector in the instrument car produced the necessary extraction effect, and caused the gases to pursue a number of different paths. A proportion of the gases collected by one sampling tube was analysed for CO₂, CO, H₂ and O₂. The gases collected by the other sampling tube were diluted with air, after which a proportion was taken and analysed for CO₂, the remainder being made to pass through an oil-fired furnace at 950° C. and then analysed for CO₂. The CO and the solid carbon were burned to CO₂ in the furnace, and a comparison of the CO₂ content of the diluted gases before and after passage through the furnace afforded an indication of the loss due to incomplete combustion. The CO content of the dilute gases could be ascertained by a comparison of their CO₂ content with the CO₂ content of the undiluted gases and hence the loss due to unburned solid carbon could be separated from the loss due to CO formation. Dilution of the sample passing through the furnace was necessary to ensure sufficient oxygen for the combustion it was desired to complete therein.

This very ingenious method for deter-

mining the amount of unburnt carbon was suggested by Mr. A. C. G. Egerton, F.R.S. Direct heat losses were computed from temperature measurements made by means of 12 suitably placed thermocouples, indications from which were taken every two minutes. A wet and dry bulb hygrometer was carried on the train to ascertain the moisture content of the atmosphere at 15 minute intervals.

Results and Conclusions

As a result of the experiments certain deductions were made:—

(1) Furnace efficiency fell considerably when the locomotive was worked near the limit of its capacity.

(2) For the best results excess air should form at least 20 per cent. of the exhaust gases, but not much more.

(3) With from 20 to 24 per cent. excess air, CO formation was not excessive if good firing technique was adopted.

(4) Six shovels of coal at each firing was preferable to twelve, as prolonged opening of the fire door produced a cooling effect and led to the formation of CO.

(5) It seemed profitable to investigate other and better ways of admitting secondary air than through the fire door.

(6) On the Crewe to Carlisle run the energy loss due to unburnt carbon averaged 5 per cent. of the energy available. This percentage increased to 30 on Shap, and declined almost to zero for long stretches on the level.

(7) For steam raising, between 70 and 75 per cent. of the total energy of the fuel was available in the modern steam locomotive engaged on heavy passenger working on a moderately difficult run. The higher figure was obtained by more powerful engines working well within capacity. The heat in the smokebox gases represented about 15 per cent. loss. If this were accounted unavoidable from 82 to 88 per cent. of the available energy was used for steam raising.

Gas Analysis Meters

In a paper entitled "Combustion Control by Means of Electrical Meters" which was also read on November 25 before the Institute of Fuel, the authors, Messrs. V. Binns, M.Sc., and S. Bairstow, B.A., of the L.M.S.R. Research Staff, described more fully the operation of the electrical CO₂, CO, O₂, and H₂ meters used in the above described experiments.

In each meter was a wire suspended in the gas under investigation, and its temperature was raised by means of an electric current. A steady temperature was reached when the loss of heat by conduction, convection, and radiation became equal to the rate of heat production. The resistance of the wire varied with its temperature, and this

resistance was compared with the resistance of similar wire losing heat to a standard gas such as air. A Wheatstone network was used so that when the composition of the investigated gas departed from that of the standard gas, and its heat conductivity changed, the network became unbalanced and a galvanometer or pointer reading was obtained. CO₂ recorders had long been made to work on this principle, and gave reliable indications of the CO₂ percentage so long as the only other gases present were O₂ and N₂, which had nearly the same conductivities, and which were to this extent interchangeable. Differences due to water vapour were reduced to nil by saturating both standard and investigated gases.

CO₂ meters by themselves did not give indications of any value if H₂ occurred in the investigated gas because H₂ affected the conductivity as well as CO₂. However the readings of a CO₂ meter were of value if an H₂ meter were available to give simultaneous readings of the H₂ content. The H₂ meter was supplied with gases from which the CO₂ had been removed by means of soda lime. Because CO had almost the same conductivity as air, its presence did not affect the readings of the CO₂ and H₂ meters. For the same reason the CO content could not be measured directly.

The gas to be tested for CO was passed through a tube containing copper oxide heated in a furnace. This removed the H₂ and changed the CO into CO₂. By comparing the conductivity of the gas before and after passing it through the furnace, the combined effect of an increased CO₂ content and a vanished H₂ content was obtained (from reading one pointer). The initial CO₂ and H₂ contents having been ascertained previously from the CO₂ and H₂ meters, the CO content could now be inferred.

The oxygen content was found by comparing the conductivity of the gas before and after passing this through a furnace tube containing heated carbon rod. The O₂ was all used up in the furnace to produce more CO₂, and this being the principal change the pointer recording the alteration in conductivity was made to move over a scale calibrated directly for the percentage of O₂. The authors gave detailed calculations and made some useful suggestions regarding the choice of instruments for furnace efficiency control.

SCAMMELL LORRIES CHANGE OF ADDRESS.—Scammell Lorries Limited announces that on December 19, 1936, the head office and registered offices of the company will be changed to Watford West, Herts, instead of High Holborn House, London, W.C.1. The telephone number is Watford 5231 (5 lines), and the telegraphic address Twelfton, Watford.

RAILWAY AND OTHER MEETINGS

Madras & Southern Mahratta Railway Co. Ltd.

The ordinary general meeting of the Madras & Southern Mahratta Railway Co. Ltd. was held at 25, Buckingham Palace Road, S.W.1, on December 16, Brig.-Gen. Charles L. Magniac, C.M.G., C.B.E., Chairman of the company, presiding.

The Secretary (Mr. G. W. V. de Rhé Philipe, O.B.E.) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said that capital expenditure for the year under review totalled Rs. 21.33 lakhs, as compared with Rs. 13.32 lakhs in 1934-35. The proportion charged to rolling stock was Rs. 4.83 lakhs, or about three times the amount under this head in the previous year; this was only to be expected, as the sum of Rs. 1.56 lakhs charged in 1934-35 was abnormally low. The amount of Rs. 10.06 lakhs debited to way and works was less by about 3½ lakhs, mainly owing to stores received late in the year not being charged off to the works for which they were intended.

Gross earnings fell by 15.38 lakhs to Rs. 662.85 lakhs, goods earnings being Rs. 12 lakhs lower, largely because of the smaller quantity of nuts and seeds exported from the company's area. Coaching traffic was down by about 6 lakhs. Road competition continued to cause serious concern. Working

expenses rose by Rs. 8.36 lakhs, being affected by restoration of wage cuts, higher fuel costs, and extra staff required by the Hours of Employment Regulations. The operating ratio went up from 59.3 to 61.8 per cent. The sum of £119,004 received by the company as surplus profits was some £40,500 less than the receipts for 1934-35.

Payment of the dividend on the ordinary stock of 4 per cent. for the half-year, as recommended, made 8 per cent. on the year, and necessitated the withdrawal of £55,000 from the dividend equalisation fund, which would then stand at £95,000, with the reserve fund at its old figure of £400,000. Net earnings to September 30, 1936, showed a decrease of about Rs. 15 lakhs over the first half of last year, and the Agent forecast an increase in working expenses in the second half.

Following receipt of a confidential letter from the Secretary of State, negotiations had been held with the Government Director, and the board was prepared to submit for acceptance the following terms for extension of the company's contract from its expiry on December 31, 1937, to, at any rate, December 31, 1945. These applied to all railways at present included in the company's system other than the portion of the Mysore State Railway

which was to be transferred to the Mysore Government on December 31, 1937. The terms were:—

(i) That the interest on debentures and debenture stock, interest at 3½ per cent. on the company's guaranteed stock, and on the total Government capital as it stood at the end of each period, should first be charged to the net earnings of the period.

(ii) That of the residue or divisible surplus the following fractions should be paid to the company as its share:—

- (a) Of the first Rs. 75 lakhs ... 1/10
- (b) Of the remainder from over Rs. 75 lakhs to Rs. 90 lakhs ... 1/20
- (c) Of any divisible surplus over Rs. 90 lakhs ... 1/30

It was estimated that, assuming that the rupee exchange remained in the neighbourhood of 1s. 6d., the above fractions would be adequate, under present traffic conditions, to furnish an annual return of not less than 1 per cent. over and above the 3½ per cent. guarantee. An extraordinary general meeting to approve these terms would be held at the Westminster Palace Rooms, Victoria Street, S.W.1, on January 7, 1937. Failing agreement at that meeting, the Chairman had to point out that the Secretary of State would have to give provisional notice of termination of the present contract on December 31, 1937.

The report and accounts were unanimously adopted, and the dividend of 4 per cent. for the half-year was approved.

Railway Freight Rebates Fund Stock

Following on the passing of the Railway Freight Rebates Act, 1936, which received the Royal Assent on Friday, December 11, a prospectus was issued on Wednesday by the Railway Clearing House offering for sale at £94 10s. per cent. £9,300,000 Railway Freight Rebates Fund Redeemable 2½ per cent. stock 1937/52. Interest is payable on June 20 and December 20. £4,000,000 of the stock has been applied for on underwriting terms on behalf of the four main-line railway companies, and will be allotted in full.

The stock is constituted and secured by a deed poll under the seal of the Railway Clearing House and will be transferable free of stamp duty. The stock is to be redeemed by the operation of an accumulative sinking fund of approximately 5.12 per cent. per annum, calculated to redeem the entire issue by December 20, 1952, and to be applied in the purchase in the market or by tender of stock at a price not exceeding par (exclusive of accrued interest but inclusive of expenses) or, to the extent to which stock is not so obtainable, in the redemption at par of stock to be selected by half-yearly drawings. The first operation of the sinking fund will be in respect of the half-year ending June 20, 1937.

The sinking fund and the interest on the stock are to be provided exclusively out of the Railway Freight Rebates Fund but not out of any other fund or monies of the Railway Clearing House and are secured by a first charge on that fund subject only to the payment of administrative expenses. The Railway Clearing House is precluded by the deed poll constituting the stock from creating any charge on the fund ranking in priority to or *pari passu* with the charge created to secure the stock. The fund is controlled and administered by the Railway Clearing House and payments are made into the fund monthly by the Railway Companies in accordance with the provisions of the Local Government Act, 1929, as amended by the Railway Freight Rebates Act, 1936, which latter Act also provides that, for the purpose of determining the priority in which debts of the railway companies are to be paid, all sums paid or payable by them into the fund are to be treated as payments of rates. Approximately 95 per cent. of the payments into the fund are made by the four main-line railway companies.

The amounts payable into the fund by the railway companies depend upon the amounts from time to time fixed

by the appropriate assessment authorities as the net annual values of the companies' railway transport properties and upon the rates levied from time to time in each rating area in which any part of such properties is liable to assessment. On the basis of the net annual values at present indicated or fixed and of the rates levied in the different rating areas in respect of the current half year, the sums so payable into the fund would amount in a year to approximately £2,330,000. The amount required annually for the interest and sinking fund on the stock is £708,807.

Glyn, Mills & Co. and Baring Brothers & Co. Ltd. having acquired the above-mentioned stock offer it for sale at the price of £94 10s. per cent. payable as follows: £5 per cent. on application; £15 per cent. on acceptance; £74 10s. per cent. on January 22, 1937.

Payment in full may be made on or after December 21, 1936, but no discount will be allowed.

The list of applications was closed within a few minutes on Wednesday morning.

Forthcoming Meetings

Dec. 23 (Wed.)—Mexican Railway Co., Ltd. (Ordinary General), Winchester House, Old Street, E.C., at 2.30 p.m.

THE MONTH'S RAILWAY LAW

Transferability of Tickets

L.M.S.R. v. Greaver. The Times, October 28.

This month again comes a case as to the misuse of a railway ticket. It was in the Divisional Court on appeal from a London Magistrate. Under company's bye-laws no person is allowed to sell or buy any ticket or to transfer or receive any partly used ticket unless the ticket itself purports to be transferable, and no person is allowed to use a ticket so transferred, unless sold by a duly authorised servant of the company. The Regulation of Railways Act, 1889, s. 5, subs. 3, makes it an offence for a person to travel on a railway without having previously paid his fare and with intent to avoid payment thereof. In the above case a passenger took an excursion return ticket from Manchester to Euston. On arrival at Euston he handed the return half to Greaver for use on the return journey. Both of them were charged with an offence against the company's bye-law and both pleaded guilty. The magistrate held that the bye-law was void and ultra vires as being contrary to general principles of law, and he dismissed the informations.

The company appealed to the Divisional Court and was successful. Lord Hewart in his judgment pointed out that if the informations had been laid under the Regulation of Railways Act, 1889, s. 5, subs. 3, both respondents would have been convicted, because the magistrate had found as a fact that the tickets had been transferred with intent to avoid payment of the fare. In his opinion the bye-law was a careful endeavour by the company to prevent the sale of tickets by unauthorised persons which in ninety-nine cases out of a hundred had its object in the avoidance of payment of the proper fare, and on that ground he thought that the bye-law could be supported.

It was certainly very wide in its terms, but as Mr. Justice Channell had said in *Gentel v. Rapps* (1902) 1 K.B. 166, "A bye-law is not repugnant to the general law because it creates a new offence, and says that something shall be unlawful which the law does not say is unlawful. It is repugnant if it makes unlawful that which the general law says is lawful. It is repugnant if it expressly or by necessary implication professes to alter the general law of the land." Here the bye-law was valid because its purpose was to prohibit transactions which must in general be fraudulent.

Intent to Avoid Payment

In his judgment in the case just mentioned the Lord Chief Justice referred to *Reynolds v. Beasley* (1919) 1 K.B. 215, which was an information under the Regulation of Railways Act, 1889, s. 5, subs. 3. In that case a person holding a workman's weekly ticket

between Windsor and Hayes had sold it to a fellow workman for sixpence. Beasley (the buyer) travelled with this ticket and handed up half of it at the end of his journey. This caused inquiries to be made, because it would in the ordinary course have been collected at the end of the week. Both the workmen were charged and held to be guilty of an offence against the statute. Mr. Justice Darling said that the words in the section "without having paid his fare" meant without having paid his fare to the company, and it was said that the words "not transferable" on the ticket showed that the transferee had taken it and used it "with intent to avoid payment of the fare." It is necessary perhaps to repeat that this conviction was under the Statute, while in *Greaver's* case the offence charged was a breach of the bye-law, a bye-law duly made under the Railways Clauses Act, 1845 and 1863, and the Railways Act, 1921.

It is satisfactory to know that this bye-law has now been held by the High Court to be valid and binding.

Rating of a Railway Bridge

The appeal of the Newcastle Corporation as to the valuation for rating of the High Level Bridge carrying the London & North Eastern Railway over the River Tyne between Newcastle and Gateshead was dismissed on November 17. Indeed the conclusive judgments of the House of Lords, affirming the Railway Assessment Authority and the Railway and Canal Commission, make the point at issue appear simple enough. In the earlier Companies Clauses Acts of 1845, which were incorporated in the Newcastle and Berwick Railway Act of that year, the word "undertaking" means "the undertaking of works of whatever nature" authorised to be executed by the Special Act. The bridge in question was authorised only on the terms that a roadway for the public benefit should be constructed as part of it. The tolls for the roadway while being a return for the public service went to increase the railway revenue generally.

The Railways (Valuation for Rating) Act, 1930, s. 1 (3), defines "undertaking" in relation to the railway company as including any subsidiary or ancillary undertaking not being a road-transport, sea-transport, or air-transport undertaking: while "railway hereditament" means any hereditament occupied for the purposes of the undertaking of a railway company. This definition was said both by Mr. Justice Mackinnon and the House of Lords to be "an expression of widest content." Both the upper and lower decks of the bridge, including the roadway, formed part of the railway undertaking, and were a hereditament "occupied" for the purpose of the company's principal undertaking. Even if that were not the correct construction the roadway

would, said Lord Blanesburgh, still be a "subsidiary or ancillary" undertaking, and it followed upon either ground that the bridge and roadway fell to be valued for rating under the Railways (Valuation for Rating) Act and not under the general law.

A Ganger's Accident

Blee v. L.N.E.R. 1936. All England Rep., vol. 3, p. 286.

The workman here, who was a ganger in the employment of the railway company, was knocked down by a car in the street on his way to work and died as a result of the accident. He was called up on emergency duty about 10.30 in the evening at his home, and the County Court Judge at Clerkenwell found that his employment began when he left home and therefore the accident arose out of and in the course of his employment. The question in these cases is, whether the man was engaged in the performance of his duty when the accident arose. The railway company appealed on the ground that he was not "under orders" until he arrived at the place where the emergency services were required. For the widow it was argued that as the work was of an emergency nature it began when the workman left home, and so was different from a case of regular employment, for the man's pay began when he left home. But the Court of Appeal could not countenance such a distinction. The accident, having happened when the man was on his way to work, did not arise out of and in the course of the employment, and so his claim for compensation under the Act failed.

B.S.S. FOR BEND TEST ON WELDED JOINTS.—The British Standards Institution has recently issued a specification outlining standard methods of making a bend test on welded joints. Whilst bending had from early days been regarded as a suitable form of test to which welds should be submitted, little information was available as to the interpretation to be placed on the result obtained or to indicate what should be regarded as the criterion of the test. As the specification points out, different physical properties may be possessed by the weld metal and by the parent metal in any one joint, and consequently the factors which influence the test need to be carefully controlled and their relative values correctly assessed. The principal points to be observed are set out very clearly in the specification. There are four forms of test which have been provided for. Briefly these can be divided into two methods of test for determining the ductability of the metal in the joint, and two methods for testing the joint as a joint such as for adequate fusion of the weld metal with the parent metal and workmanship generally. Copies of the specification (B.S.S. No. 709—1936) may be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1, price 2s. 2d., post free.

Staff and Labour Matters

Proceedings before Railway Staff National Tribunal

The Railway Staff National Tribunal, which has been considering claims made by the Associated Society of Locomotive Engineers and Firemen, held a final public sitting on Saturday last, December 12. Sir Arthur Salter, the Chairman, opened the proceedings by stating that his colleagues had asked him to put to the two parties certain questions on behalf of the tribunal, in respect of the statements of claims heard earlier in the week; the object was to bring out both the strength and the weakness of the opposing arguments.

Sir Arthur then prefaced the questions by a general review of the position, with particular reference to the conclusions reached by the tribunal in July last, and recorded in Part I of Decision No. 1. Sir Arthur referred to the fact that requests made to the tribunal in July, 1936, involved a sum of £3,000,000 a year, and, after going carefully into the financial position of the companies, the course of developments in previous years, and also prospects, the tribunal came to the conclusion that it was justified in giving concessions which amounted in effect to just over £1,000,000 per annum; in other words, a little more than a third of the total asked for. The tribunal felt justified in making the concession for various reasons, which he stated in detail.

The Chairman then asked Mr. Squance whether he contended that in respect of the first part of the society's claim (that relating to the termination of the percentage deduction from earnings) there were any special considerations applying to drivers, firemen, and engine cleaners as distinct from other classes of railway employees. In reply Mr. Squance urged that the "snowball" effect of the pay cuts under National Wages Board Decision No. 119 bore heavily on locomotive men.

In reply to a further question, Mr. Squance expressed the view that the improvement in the companies' financial position was greater during the last few months than could reasonably have been foreseen in July.

Mr. Kerr, speaking for the companies, agreed it was fair to say that the improvement has been somewhat greater than was expected, but he pointed out that the improvement had a gradual rather than a rapid trend, and to illustrate his argument he submitted statistical tables showing the week to week figures of traffic receipts for the first forty-nine weeks of 1936 compared with the corresponding period of 1935. These showed that the increase over 1935 was £4,500,000 up to the forty-ninth week. In reply to questions, Mr. Kerr agreed that the total increase for the year might reach quite £5,000,000, taking into account the extra (Leap Year) day.

Questions were then put concerning

the probable net position at the end of 1936, but Mr. Kerr stated he did not think he could make any helpful estimate in relation to net receipts, there being so many factors—especially on the expenditure side—which had to be taken into account. Mr. Kerr was then closely questioned concerning the relief which the companies expected to receive in respect of rating. Sir Arthur Salter suggested that in addition to the relief to the annual value of £2,275,000, companies would have a "capital windfall" of approximately £10,000,000.

To this Mr. Kerr replied that throughout it has been stated by the companies at every setting out of their financial position, that they expected, and were claiming, and hoped to get, a 50 per cent. reduction on the high charge resulting from a high assessment. "The figure of £10,000,000 has always been in the air," he said, "as a possible overcharge payment to be restored ever since the first ascertainment of the probable factor of arrear." Mr. Kerr added that since, and including, the year 1926 the withdrawals from reserves had amounted to some £30,000,000.

Sir Arthur Salter stated the tribunal would have to consider the various factors which had been mentioned, but he thought it was a fair thing to say that, *prima facie*, there was suggested a substantial improvement as compared with the actual position known in July, and some improvement on the prospective position as anticipated by the tribunal in July and taken as the basis for its decision.

Questions were then asked of Mr. Squance and of Mr. Kerr concerning various aspects of the individual items of the claim, notably the six-hour day, Sunday duty, night duty, overtime, and holidays with pay.

The Menace of a Six-Hour Day

During these questions it was brought out that the cost of conceding the claim for a six-hour day in respect of drivers, firemen, and cleaners alone, would amount to £6,000,000 per annum, and Mr. Squance agreed that the acceptance of their claims would mean a very complete reversal of the standard suggested either by the National Agreement of 1919, or by National Wages Board Decision No. 1 of 1931, and the Tribunal's Decision No. 1 of July, 1936.

Mr. Kerr stated that the claim for a six-hour day was a claim for £6,000,000, "with a potential threat of something very much more." If extended to other sections of railway employees, the cost would be well over £30,000,000. The companies, he said, were not in such a position that they could take this enormous additional burden and carry it themselves. On the other hand, the only way in which

they could seek to recompense themselves for an additional burden would be to endeavour to pass that burden on through the medium of fares and charges to the public and the trader. Mr. Kerr went on to say that the position was that the companies had no automatic method of increasing their charges in ratio to an increase in their expenses. Any enormous addition like this was "most menacing; and might cripple the industry."

Mr. Ayre, a member of the tribunal, asked whether in any circumstances, having regard to the present position of the railway industry, depending upon the export industries and heavy industries which had been responsible for such improvement as has been made in the railway industry, those industries could entirely accept any handing on of the additional wages expenditure.

Mr. Kerr replied that he doubted if the industries of the country could bear it economically, and in reply to a further question stated that the railway industry would break down if an excessive burden were imposed on it from outside. He thought the effect would be that the power of the railway industry to afford employment would be diminished very alarmingly. At the conclusion of the questions Sir Arthur Salter made a statement in which he expressed the satisfaction of the tribunal that they had had the advantage—a great advantage as compared with tribunals dealing sometimes with other industries—of having statements of fact as distinct from arguments based upon a fact, agreed in practically every case beforehand, and not the subject of controversy and contention. Sir Arthur pointed out that some "substantial delay" must elapse before a decision was given. He said the tribunal would have to have in mind the decision which it took in July as implying a certain standard, and the standard that was then suggested. He said too, that as regarded claims which in their very nature tended to apply to railway employees generally, a certain special inconvenience was naturally caused by an attempt to consider them at a different time of the year and out of relation to claims in respect of other grades of employees.

Road Transport Hours

Reference was made in these notes on November 6 and December 4 to applications made for variation of the provisions of Section 19 of the Road Traffic Act, 1930. The applications were considered by the Industrial Court, which submitted advice to the Minister of Transport. The Minister has now made an Order permitting drivers of vehicles operated under "C" licences to drive for twelve hours in all on not more than two days in each of the three weeks ending December 19 and December 26, 1936, and January 2, 1937, respectively.

NOTES AND NEWS

Home Railway Dividend Dates.

The dates on which the respective final dividends of the four main line railway companies are expected to be announced are:—February 8, Southern; February 10, L.M.S.R. and Great Western; February 19, L.N.E.R.

Staines and Weybridge Electrification, Southern Railway.—The Southern Railway has issued a timetable embodying the revised train services resultant from the extension of electrification from Staines to Weybridge, that will come into force on January 3.

Southampton Docks Rating.—A Divisional Court granted on December 11 an application by the Corporation of Southampton for rules to the Railway Assessment Authority ordering it to show cause why it should not bring up to be quashed entries made in the Southern Railway valuation roll with regard to Southampton docks. The authority had reduced the rateable value of the docks from £100,000 to just under £50,000.

Another London Transport Trolleybus Route.—On Sunday last, December 13, the London Passenger Transport Board began a new through 11½-mile service of trolleybuses (No. 655) from Craven Park to Hammer-smith by way of Acton, Hanwell, Brentford, and Chiswick. As a result the 2½-mile tramway service between Hanwell and Brentford was withdrawn. This was the last remaining section of the system latterly worked by the London United Tramways Limited to remain as a tramway route.

Record L.M.S.R. Traffic to Blackpool.—Mr. F. H. Cowell, District Passenger Manager, Manchester, L.M.S.R., announced at a staff dinner at Blackpool on December 12 that for the first time the company's traffic to the resort had passed the three million mark. The actual total of 3,078,131 was 94,000 above that of the previous year. A record number, 889,125, had also been carried during the illuminations period from September 12 to October 19. It was found that the average passenger by the half-day and evening excursions to the illuminations made a double journey of 188 miles.

Beira Railway Debenture Stock.

—An issue will be made at par early in the New Year of £2,000,000 5 per cent. first debenture stock of the Beira Railway Company. The main purpose of the issue is to provide for the redemption of the 5 per cent. prior lien rent charge and of the 6½ per cent. debenture stock, the outstanding amount of which is £1,771,170. Holders of the 6½ per cent. debenture stock are being given the right to convert their holdings into the new stock on the basis of their receiving an equal amount of that stock together with a cash capital payment of

11s. 6d. per cent., representing the interest adjustment to July 2, 1937.

Argentine North Eastern Moratorium.—The trustees for the holders of the 5 per cent. "B" debentures and "B" debenture stock of the Argentine North Eastern Railway Company have extended the interest moratorium until December 31, 1937.

South African Electrification.—The first electrically-hauled train on the Cato Ridge-Durban section ran through from Glencoe on December 2, carrying Mr. O. Pirow, Minister of Railways and Harbours, and a large party. It is not expected that a full electric service will begin before February.

Railway Casualty Fund.—The Railway Benevolent Institution Casualty Fund Collection is now being made. A 1s. subscription secures a return of about 3s. 6d. a week whilst disabled by accident (£5 maximum); £5 to the widow of a member killed; and £3 to the widow of a member dying from natural causes during the year of membership. Benefits are paid irrespective of other income. Subscriptions will be received by any stationmaster or agent, from whom particulars are available.

New Goods Depot for Westbourne Park, G.W.R.

—A new goods depot, specially for heavy seasonal perishable freight traffic coming into London, is to be built by the G.W.R. at Westbourne Park, near Paddington station. The depot is to have a platform 400 ft. in length by 30 ft. in width, and a two-storey warehouse so constructed as to lend itself to the provision of other floors as required. Lifts will connect the platform with the upper floors of the building, and overhead runways and the latest equipment for rapid handling of this perishable traffic will be provided. Some idea of the extent of the seasonal traffic now handled is given by the fact that as much as 1,200 tons of broccoli are sent in a week from Cornwall to Paddington, and 600 tons from the Worcester districts.

Bouts-Tillotson "A" Licences.

—The Transport Appeal Tribunal heard on December 11 further arguments on behalf of the four main-line railway companies in their appeal against the award of "A" licences to Bouts-Tillotson Transport Limited for 128 vehicles and 42 trailers to be used in long-distance services. The licences were granted by Mr. Gleeson Robinson, licensing authority for the Metropolitan Area. Reading of the evidence taken at the original hearing was concluded. On Monday the railway arguments were concluded, and it was pointed out that the companies had no desire to eliminate the road transport industry, whose value they admitted. The case for Bouts-

Tillotson was opened on Monday, and continued on Wednesday and yesterday. It was contended that if the railway arguments prevailed the onus would be on every applicant for an "A" licence to satisfy the licensing authority that the traffic he wished to carry could not be suitably carried by the railways.

Charing Cross Station.—On December 16 an altered arrangement of the ticket barriers at Charing Cross station on the Southern Railway was brought into use. It gives a much-needed increase in the circulating area, and provides direct connection between platforms 1, 2, and 3.

Abandoned U.S.A. Railway Mileage.—After having increased every year since 1929, the abandoned railway mileage totals in the U.S.A. showed a slight drop in respect of the year 1935. During the last 14 years, no fewer than 12,870 route miles have been abandoned, of which total the year 1935 contributed 1,843 miles (against 1,995 in the year 1934). The individual totals are: 1922, 677 miles; 1923, 513 miles; 1924, 693 miles; 1925, 606 miles; 1926, 457 miles; 1927, 282 miles; 1928, 512 miles; 1929, 475 miles; 1930, 694 miles; 1931, 795 miles; 1932, 1,452 miles; 1933, 1,876 miles; 1934, 1,995 miles; 1935, 1,843 miles.

Protection of Facing Points.

At a meeting of the Institution of Railway Signal Engineers in London on December 16, Mr. R. S. Griffiths, Past President, delivered a lantern lecture on "A Chronological Record of the Protection of Facing Points," illustrated by an extensive series of slides and covering the leading ideas on the subject and corresponding appliances from early years to the present day. The following took part in the discussion: Messrs. H. F. D. Page, T. S. Lascelles, M. Gheury de Bray, W. Challis, E. W. Hallam, W. J. Sadler, C. S. Williams, T. E. Brown, and the President, Mr. W. S. Roberts. The next meeting will be on January 27.

Pictorial Luggage Labels for L.N.E.R. Named Trains.

—The L.N.E.R. has issued a series of circular illustrated labels for use on the luggage of passengers travelling by the company's principal named expresses. Every label has a train design on a two-colour background, across which runs a black band having the name of the destination in bold white lettering. The name of the railway and the train service appear in white letters round the circumference of the label. The labels and their colours are as follows:—

The Flying Scotsman: gold, yellow, and black.

The Queen of Scots: yellow, green, and black.

The Silver Jubilee: silver, blue, and black.

The Yorkshire Pullman: orange, blue, and black.

L.N.E.R. steamship services from Harwich: various colour schemes.

Similar labels have been printed for the week-end cruises from Harwich, and for the Northern Belle cruise

folder. Standard or streamlined Pacifics are shown in outline on most of the train service labels, but that for the Flying Scotsman presents a silhouette of a streamlined Mikado of the "Lord President" type.

New Halt at Fulwell, L.N.E.R.—

In order to provide rail travel facilities for the rapidly developing district of Fulwell, near Sunderland, the L.N.E.R. is about to erect a halt on a site between Monkwearmouth and East Boldon stations on the Sunderland & Newcastle branch. The new station, which will be only 800 yd. from the sea front, will be equipped with two platforms, each 504 ft. long, waiting room accommodation, and a Passimeter booking office. An hourly service of trains will be provided to and from Newcastle, and a half-hourly service to and from South Shields, with additional trains on Saturdays.

Polish Electrification.—The first section of the Polish State Railways Warsaw suburban electrification was opened officially by General Skladowski, the Polish premier, on December 15.

The section opened is from Pruszkow, on the south-western line, through Warsaw Central and Eastern stations to Otwock, on the south-eastern line. The conversion of this and the remaining lines to 3,000 volts d.c. was entrusted to the Metropolitan-Vickers Electrical Co. Ltd. and the English Electric Co. Ltd. at the end of 1933 and has been financed by the Export Credit Guarantee fund. The cost of the whole scheme is about £2,500,000.

Road Accidents.—The Ministry of Transport return for the week ended December 12 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year:—

	Killed, including deaths resulting from previous accidents		Injured	
England	99	(106)	3,327	(3,386)
Wales	5	(11)	119	(124)
Scotland	10	(11)	278	(333)
	114 (128)		3,724 (3,843)	

The total fatalities for the previous week were 157, compared with 125 for the corresponding period of last year.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 50th Week			Totals to Date		
	1936	1935	Inc. or Dec.	1936	1935	Inc. or Dec.
L.M.S.R. (6,916½ mls.)						
Passenger-train traffic...	420,000	422,000	— 2,000	24,656,000	24,038,000	+ 618,000
Merchandise, &c. ...	513,000	512,000	+ 1,000	24,068,000	22,780,000	+ 1,288,000
Coal and coke ...	303,000	318,000	— 15,000	12,124,000	11,783,000	+ 341,000
Goods-train traffic ...	816,000	830,000	— 14,000	36,192,000	34,563,000	+ 1,629,000
Total receipts ...	1,236,000	1,252,000	— 16,000	60,848,000	58,601,000	+ 2,247,000
L.N.E.R. (6,332 mls.)						
Passenger-train traffic...	282,000	278,000	+ 4,000	16,066,000	15,738,000	+ 328,000
Merchandise, &c. ...	353,000	341,000	+ 12,000	16,419,000	15,890,000	+ 529,000
Coal and coke ...	265,000	286,000	— 21,000	11,680,000	11,311,000	+ 369,000
Goods-train traffic ...	618,000	627,000	— 9,000	28,099,000	27,201,000	+ 898,000
Total receipts ...	900,000	905,000	— 5,000	44,165,000	42,939,000	+ 1,226,000
G.W.R. (3,746½ mls.)						
Passenger-train traffic...	183,000	180,000	+ 3,000	10,415,000	10,195,000	+ 220,000
Merchandise, &c. ...	208,000	194,000	+ 14,000	9,618,000	9,212,000	+ 406,000
Coal and coke ...	119,000	126,000	— 7,000	5,066,000	5,055,000	+ 11,000
Goods-train traffic ...	327,000	320,000	+ 7,000	14,684,000	14,267,000	+ 417,000
Total receipts ...	510,000	500,000	+ 10,000	25,099,000	24,462,000	+ 637,000
S.R. (2,153 mls.)						
Passenger-train traffic...	257,000	250,000	+ 7,000	15,259,000	14,941,000	+ 318,000
Merchandise, &c. ...	65,500	61,500	+ 4,000	3,148,500	3,089,000	+ 59,500
Coal and coke ...	35,500	38,500	— 3,000	1,542,500	1,515,000	+ 27,500
Goods-train traffic ...	101,000	100,000	+ 1,000	4,691,000	4,604,000	+ 87,000
Total receipts ...	358,000	350,000	+ 8,000	19,950,000	19,545,000	+ 405,000
Liverpool Overhead ...	1,196	1,148	+ 48	59,763	58,817	+ 946
Mersey (4½ mls.) ...	4,856	4,486	+ 370	205,862	201,438	+ 4,424
*London Passenger Transport Board ...	565,000	564,100	+ 900	13,468,000	13,076,100	+ 391,900
IRELAND						
Belfast & C.D. (80 mls.) pass.	1,590	1,665	— 75	125,584	124,667	+ 917
" " goods	435	532	— 97	26,787	25,664	+ 1,123
" " total	2,025	2,197	— 172	152,371	150,331	+ 2,040
*Great Northern (543 mls.) pass.	8,150	8,650	— 500	530,450	510,150	+ 20,300
" " goods	8,500	8,300	+ 200	474,400	470,900	+ 3,500
" " total	16,650	16,950	— 300	1,004,850	981,050	+ 23,800
*Great Southern (2,067 mls.) pass.	30,226	30,069	+ 157	1,763,708	1,709,544	+ 54,164
" " goods	59,789	61,324	— 1,535	2,166,602	2,034,009	+ 132,593
" " total	90,015	91,393	— 1,378	3,930,310	3,743,553	+ 186,757

* 24th week.

† 49th week.

British and Irish Railways Stocks and Shares

Stocks	Highest 1935	Lowest 1935	Prices	
			Dec. 16, 1936	Rise/ Fall
G.W.R.				
Cons. Ord. ...	55½	44½	62½	+2
5% Con. Prefce ...	124	108	125½	—
5% Red. Pref. (1950) ...	117	106½	110½	—
4% Deb. ...	118½	108	113*	—1½
4½% Deb. ...	122	110	117½*	—2
4½% Deb. ...	129½	118	124½*	—2
5% Deb. ...	140¼	130	136½*	—1
2½% Deb. ...	82¼	68½	75½*	—1
5% Rt. Charge ...	137	128	133½*	—2
5% Cons. Guar. ...	136½	120½	133	—1½
L.M.S.R.				
Ord. ...	25½	16	32	+½
4% Prefce. (1923) ...	58¼	43½	81½	+½
4% Prefce. ...	87½	73½	91½	+½
5% Red. Pref. (1955) ...	107	97½	107	—
4% Deb. ...	110¼	99½	107½	—
5% Red. Deb. (1952) ...	119½	111½	116½	—
4% Guar. ...	105½	95½	104½	—
L.N.E.R.				
5% Pref. Ord. ...	157½	81¼	111½	+¼
Def. Ord. ...	79½	43¼	5½	+¼
4% First Prefce. ...	74½	48	77	—
4% Second Prefce. ...	31¼	16¼	29	+1
5% Red. Pref. (1955) ...	92¼	71	99	—
4% First Guar. ...	103½	93	102	—
4% Second Guar. ...	98½	82½	97½	+½
3% Deb. ...	86	75	83½	+½
4% Deb. ...	109¼	98½	107	+½
5% Red. Deb. (1947) ...	118¼	106½	112½	—
4½% Sinking Fund Red. Deb.	112½	108	109½	+½
SOUTHERN				
Pref. Ord. ...	87½	69½	95	+1
Def. Ord. ...	25½	16¼	25	+½
5% Prefce. ...	124	108¼	125	—
5% Red. Pref. (1964) ...	117¾	109½	117½	—
5% Guar. Prefce. ...	136½	121½	133½	—
5% Red. Guar. Pref. (1957) ...	121¼	112½	117½	—
4% Deb. ...	116½	107	112	—
5% Deb. ...	138	130¼	135½	—
4% Red. Deb. ...	115	106½	112	—
1962-67				
BELFAST & C.D.				
Ord. ...	9	4	5½	—
FORTH BRIDGE				
4% Deb. ...	111¼	104¼	104½*	—1
4% Guar. ...	109½	71	104½*	—1
G. NORTHERN (IRELAND)				
Ord. ...	20	7	12	—
G. SOUTHERN (IRELAND)				
Ord. ...	57½	14½	58½	—
Prefce. ...	50	25¼	65	—
Guar. ...	88½	51¼	94	+1
Deb. ...	86¼	70	95½	—1
L.P.T.B.				
4½% "A" ...	130	119½	124½	—
5% "A" ...	139½	130	135½	—
4½% "T.F.A." ...	113¼	108	109	—
5% "B" ...	131½	122½	125½	—
"C" ...	109½	91	97	+2
MERSEY				
Ord. ...	23½	9¼	37½	—
4% Perp. Deb. ...	100½	93½	101	—
3% Perp. Deb. ...	75½	67	76½	—
3% Perp. Prefce. ...	62	47¼	67½	—

* ex dividend

CONTRACTS AND TENDERS

D. Wickham & Co. Ltd. has received a repeat order from the Central Uruguay Railway of Montevideo, for two No. 50 petrol-engined six-seater inspection railcars to be fitted with 10 h.p. Ford engines.

Uddeholms General Agencies Limited has received an order from the Madras & Southern Mahratta Railway for 5,466 steel boiler flue and arch tubes, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Fried Krupp A.G. has received an order from the Madras & Southern Mahratta Railway Administration for 782 locomotive, carriage, and wagon tyres, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

R. Wright & Partners Limited has received an order from the Indian Stores Department for 800 laminated bearing springs.

Scharfenbergkupplung A.G. has received orders for Schaku automatic couplings required for the eight double-bogie diesel railcars being built by Werkspoor for the Netherlands Railways.

The Vitkovice Ironworks, one of the largest concerns of its kind in Czechoslovakia, has secured a contract for the supply of 29,000 tons of rails and other material for the Chekiang-Kiangsi Railway, China. The value of this contract is estimated at 42,000,000 crowns, and the deliveries will be made in March and April of next year. The Coal & Iron Company and the Prague Iron Company will, it is understood, co-operate in the execution of the contract.

The Chicago, Rock Island & Pacific Railway is reported to have ordered 35,000 tons of steel rails to a total value of \$1,273,000, from the Carnegie, Illinois, Inland Steel, and Colorado Fuel & Iron firms.

The Baltimore and Ohio Railroad has placed orders for 52,000 tons of new steel rail, divided among the following firms:—

Bethlehem Steel Company, 17,500 tons of 131-lb. steel rail, most of which will be rolled at the Sparrows Point, Md., plant.

Carnegie-Illinois Steel Company, 32,500 tons, of which 22,700 tons of 131-lb. steel rail is to be rolled at the Edgar Thompson and Gary plants and 9,800 tons of 112-lb. steel rail at the Edgar Thompson plant.

Inland Steel Company, 2,000 tons of 112-lb. steel rail, to be rolled at the Indiana Harbour, Ind., plant. This rail is ordered for the Baltimore & Ohio Chicago Terminal Railroad Company, subsidiary of the B. & O. Railroad.

Both the Bethlehem and Carnegie-Illinois orders are subject to 20 per cent. cancellation in tonnage.

The Metropolitan - Vickers Electrical Co. Ltd. has received an order from the

London Passenger Transport Board for the electrical equipment for three metadyne battery locomotives. This company also has in hand an order for 85 d.c. traction motors for the Netherlands Railways.

Steel Tube Manufacture

Sir John Jarvis announces that he has completed negotiations with Stewarts and Lloyds Limited and Tube Investments Limited for the establishment at Jarrow of works for the manufacture of high-grade steel tubes. The freehold property known as Palmers' Boiler Works, and comprising three acres of land and modern factory buildings and equipment, has been acquired. Some alterations will be necessary, but it is expected by Sir John Jarvis that arrangements will be completed in time to begin production in the spring.

Samuel Osborn (India) Limited has received an order for the supply for one year ending September 30, 1937, of files to the Bombay, Baroda & Central India Railway Administration.

The Lithuanian Government has decided to award a contract for the supply of brakes to the value of over £85,000 to the Westinghouse Brake & Signal Co. Ltd., states a Reuters message.

The Associated British Machine Tool Makers Limited has received orders from the Indian Stores Department for two axle journal returning, burnishing and wheel-boss facing machines with electrical equipment.

The Crown Agents for the Colonies have recently placed orders for equipment and materials as follow:—

Turners Asbestos Cement Company, Asbestos sheets.

Cochranes (Middlesbrough) Foundry Limited, Cast iron water pipes.

R. Johnson & Nephew Limited, Copper wire. Callender's Cable & Construction Co. Ltd., Electric cable.

Stewarts and Lloyds Limited, Galvanised tubing.

Wellington Tube Works Limited, Galvanised water piping.

Morris Industries Exports Limited, Lorries and vans.

R. White & Sons, Manufacture of switches and crossings.

Whitehead Iron & Steel Co. Ltd., Mild steel and reinforcing bars.

Torbay Paint Co. Ltd., Paints and enamels.

Cement Marketing Co. Ltd., Portland cement.

Lancashire Steel Corporation Limited, Rails and fishplates.

P. & W. MacLellan Limited, Rolled steel joists and steelwork for bridges.

Steel Co. of Scotland Ltd., J. Baker & Bessemer Limited, Taylor Bros. & Co. Ltd., Steel Peech & Tozer, T. Firth & J. Brown Limited, Steel tyres.

J. Walsh & Co. (Birmingham) Ltd., Structural steel sections.

Gourock Ropework Co. Ltd., Tarpaulins.

Bullers Limited, Telegraph ironwork.

W. T. Henley's Telegraph Works Co. Ltd., Telephone cable.

General Electric Co. Ltd., Telephone materials.

Capper, Pass & Son Limited, Tin.

G. Kent Limited, Water meters.

Staveley Coal & Iron Co. Ltd., Water pipes.

G. Heppenstall, Wool waste.

Uddeholms has received an order from the Egyptian State Railways Administration for the supply of boiler tubes to the total value of £4,175 (Ref. No. E.S.R. 317, G3/7, delivery free Port Said).

John Baker & Bessemer Limited has received an order from the Bengal-Nagpur Railway for 200 tyres for locomotive tenders.

The Chinese Government Purchasing Commission has placed orders to the inspection of Messrs. Fox & Mayo for equipment, required for the Tientsin-Pukow Railway, as follows: Cambridge Instrument Company, Stress measuring instruments; and Quasi-Arc Co. Ltd., electrodes.

The Bengal-Nagpur Railway Administration has placed the following orders:—

United Steel Cos. (India) Ltd., Mild steel angles to be manufactured by Appleby Frodingham Steel Co. Ltd., and laminated steel springs, to be manufactured by Steel Peech & Tozer.

Martin & Company, Steel billets, to be manufactured by English Steel Corporation, and mild steel sheets to be manufactured by F. Braby & Company.

Heatly & Gresham Limited, Mild steel bar, to be manufactured in Brown, Bayley's Long-Strand steel.

Jessop & Co. Ltd., Volute steel springs, to be manufactured by Barrow Haematite Steel Company.

John King & Co. Ltd., Yorkshire iron bar, square, to be manufactured by N. Hingley & Sons.

The November bookings of the Baldwin Locomotive Works amounted in value to \$8,877,000, compared with \$2,312,000 in November, 1935. Shipments totalled \$1,723,000, against \$1,228,000, while the value of unfilled orders on November 30 was \$21,664,000 compared with \$6,740,000 on November 30, 1935.

Tenders are invited by the Assam Bengal Railway, receivable at 56, Victoria Street, Westminster, S.W.1, by December 31, for the supply of 176 pairs of carriage and wagon wheels and axles.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Miscellaneous Section), New Delhi, receivable by January 4, for the supply of rivets, bolts, nuts, wood screws, washers, and springs.

Tenders are invited by the Agent, G.I.P. Railway, Victoria Terminus, Bombay, receivable by January 6, for the supply of locomotive boilers, required for A3 (narrow-gauge) and Y7 (broad-gauge) type locomotives.

The South African Railways & Harbours Administration is calling for tenders (Tender No. 1168) for the supply and delivery as and when required during the period July, 1937, to June, 1938, of quantities of train lamps and fittings, including burners, reservoirs, interiors, combustion chambers, glasses, reflectors, glass bevelled fronts, and bull's-eye lenses. Tenders endorsed "Tender No. 1168 for lamps and fittings" should be addressed to the Chief Stores Superintendent, Park Station Chambers, Johannesburg, to be received by January 25, 1937.

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.
Railway Freight Rebates Act, 1936

Railway Freight Rebates Scheme

NOTICE IS HEREBY GIVEN that the Railway Rates Tribunal will sit at 10.30 a.m. on Friday, the 18th day of December, 1936, in Court "A," Judges' Quadrangle, Royal Courts of Justice, London, to make such amendments in the Railway Freight Rebates Scheme as the Tribunal may consider necessary by reason of the provisions of the Railway Freight Rebates Act, 1936.

Notice is further given that the Tribunal have received a Certificate under the seal of the Minister of Transport dated the 11th day of December, 1936, issued under the provisions of the Eleventh Schedule to the Local Government Act, 1929, as amended by the Railway Freight Rebates Act, 1936, which Certificate will be taken into consideration at the aforesaid hearing.

The said Certificate and any documents lodged with the Tribunal may be inspected at the office of the Registrar to the Tribunal, Bush House, Aldwych, London, W.C.2, at any time prior to the hearing, during office hours.

Any Railway Company to which the said Scheme applies or Representative Body of Traders interested, which may be desirous of being heard before the Tribunal, must file a Notice of such desire at the Office of the Registrar, Railway Rates Tribunal, Bush House, Aldwych, London, W.C.2, on or before Wednesday, the 16th day of December, 1936.

Such Notices must be on foolscap size paper and must state concisely the Submission (if any) which is desired to be made. A Notice by a Representative Body of Traders must in addition contain a statement of the facts upon which such Body claims to represent a substantial number of persons interested in any or all of the selected traffics.

Each Notice filed must be stamped with an adhesive for stamp for 2s. 6d. (which can be purchased at the offices of the Tribunal only). If sent by post each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar, Railway Rates Tribunal, when a stamp will be affixed at the office. Six additional copies of each Notice must be lodged with the original at the office of the Registrar.

Dated this 11th day of December, 1936.

T. J. D. ATKINSON,
Registrar.

REQUIRED, Junior Carriage and Wagon Draughtsman for London office of Consulting Engineers; preferably with some railway experience. Write giving full particulars of training, experience, age, &c., and salary required, to Box "T.M.A.," c/o 95, Bishopsgate, London, E.C.2.

THE MADRAS & SOUTHERN MAHRATTA RAILWAY COMPANY LIMITED invite Tenders for:

850 TONS (APPROX.) STEEL MATERIAL (comprising M.S. Rounds, Squares, Flats, Angles, Tees, &c., approx. 522 tons, and M.S. Plates and Sheets, approx. 328 tons). Specification and Form of Tender can be obtained at the Company's Offices, 25, Buckingham Palace Road, Westminster, London, S.W.1. Fee ONE GUINEA, which will not be returned.

Tenders must be submitted not later than 2.03 p.m. on TUESDAY, 12th JANUARY, 1937.

The Directors do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
 G. W. V. DE RHE PHILIPPE,
 Secretary.

South Indian Railway Co. Ltd.

THE Directors are prepared to receive Tenders for the supply of:—

1. COPPER RODS, SHEETS AND TUBES, BRASS RODS AND WIRE.
2. MOIST ZINC WHITE PAINT.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders addressed to the Chairman and Directors of the South Indian Railway Company Limited, marked "Tender for Copper Rods, &c.," or as the case may be, with the name of the firm tendering, must be left with the undersigned not later than 10 a.m. on Monday, the 4th January, 1937.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 10s. for each copy of Specification No. 1 and of 5s. for each copy of Specification No. 2.

E. A. S. BELL,
Managing Director.

91, Petty France,
Westminster, S.W.1.
16th December, 1936.

Universal Directory of Railway Officials and Railway Year Book

42nd Annual Edition, 1936-37

Price 20/- net.

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.

THE DIRECTORY PUBLISHING CO. LTD.
 33, Tothill Street, Westminster, S.W.1.

Belgian Train Services

The opening of the Bruges cut-off on July 15 last has reduced the distance from Ostend to Brussels (Nord) to 72.1 and to the Midi station to 70.8 miles, and in place of last summer's 67-min. run from Brussels Midi to Ostend, two trains are booked from Ostend to Brussels Nord in 67 min. with a momentary stop at Ghent, and from Brussels Nord to Ostend, also with a stop at Ghent, there is one 67-min and one 68-min. timing. A speed of 140 km.p.h. (87 m.p.h.) is now permitted between Ghent and Bruges, and non-stop trains can pass Ghent at 120 km. (74½ m.p.h.), but there is still a limit to 100 km. (62 m.p.h.) over the cut-off.

A new *train-bloc* (second and third class) now runs at 7.52 from Lille to Brussels (Midi), calling only at Tournai, in 85 min. and returns from Brussels at 22.00. It is timed between Tournai and Brussels (83 km. = 51½ miles) in 60 min., which is equivalent to the booking of the Calais—Brussels Pullman.

Elsewhere schedules for the winter are almost identical with those of last May, and the triple-car diesel-electric trains take turns with steam trains between Brussels (Midi) and Charleroi, 35 miles, where an hourly express service now operates in 41 and 42 minutes; between Brussels (Midi) and Ghent, 32.3 miles in 32 minutes, and Brussels and Mons, 37.5 miles in 38 min., and work between Brussels Nord and Liège at the ordinary 75 and 72 min. schedules, and between Brussels (Quartier Léopold) and Namur in 37 min. (34 miles).

On this last run the diesel schedule is 4 or 5 minutes faster than that of the best steam service, but elsewhere the timings are identical, and on the Brussels and Charleroi run, with long speed-restrictions to 60 km.p.h. (37 m.p.h.) at Baulers and Luttre, the steam trains, which are used at hours when the traffic is too heavy for the 229 seats provided in the diesel three-car units, have a hard task to keep time.

Punctuality has certainly not been affected by the accelerations, and during a recent visit we noted 35 journeys (including late arrivals of 11 and 12 min. by engine trouble) to give an average lateness of only 1.7 min. On the Brussels—Antwerp electric service, where the trains now work at 20-min. intervals (10-min. at rush

hours) and cover the 44.5 km. (27½ miles) in 29 min. non-stop or 31 min. with a stop at Malines, a late arrival is most rare although speed is limited to 120 km. (and rarely exceeds about 124 km.p.h.) and at the date under notice a severe relaying slack, to about 25 km.p.h., operated on the Brussels—Antwerp run.

Forthcoming Events

Dec. 18 (Fri.).—Institute of Transport (Manchester-Liverpool), at Exchange Station Hotel, Liverpool, 6.30 p.m. "The Ground Services Essential to the Safety of Air Transport," by Mr. H. Andrews.

Dec. 19 (Sat.).—L.N.E.R. Musical Society, at Queen's Hall, Langham Place, London, W.1, 8 p.m. Carol Concert.

Dec. 21 (Mon.).—Institute of Welding (Tees-side), at Cleveland Scientific Inst., Corporation Road, Middlesbrough, 7.30 p.m. "Welding of Non-Ferrous Metals," by Mr. E. Partington.

Exports of Railway Material from the U.K. in November

	Nov., 1936	Nov. 1935	Eleven Months Ending	
			Nov., 1936	Nov., 1935
Locomotives, rail	£ 104,937	£ 46,932	£ 1,200,434	£ 688,424
Carriages and wagons	191,351	171,146	1,243,700	1,155,431
Rails, steel	86,187	103,084	1,104,358	846,421
Wheels, sleepers, fishplates and miscellaneous materials	101,404	160,544	1,351,651	1,745,239

Locomotive and rail exports included the following:—

	Locomotives		Rails	
	Nov., 1936	Nov., 1935	Nov., 1936	Nov., 1935
Argentina	£ —	£ —	£ 2,614	£ 9,394
Union of South Africa	—*	—*	60,603	111,059
British India	5,583	—	16,348	36,755

* Figures not available

Railway Share Market

Home railway stocks have not participated in the more buoyant conditions in evidence in most sections of the Stock Exchange since the beginning of the new account on Monday. Fears that the past week's traffic would make a disappointing comparison with those of a year ago (when there were again exceptionally large movements of coal) had an adverse influence on sentiment. The traffic figures for the week show a decrease of £3,000. L.M.S.R. ordinary was reactionary and has been lowered to 32 on the railway's £16,000 decrease in the past week's receipts, but both the 4 per cent. preference and 1923 preference were relatively steady. Great Western was also a fairly steady feature at 62½, satisfaction with the £10,000 traffic gain being a favourable influence.

Southern preferred and deferred were firm, there being a traffic gain of £8,000

in this case, while L.N.E.R. first and second preference were fairly well maintained. The past week's figures of the last-named railway show a decrease of £5,000. There is a good deal of discussion just now as to the stocks of the main line railways which seem to offer the largest scope for appreciation in 1937, and the view is gaining ground that those of the L.N.E.R. may have very favourable possibilities as there is apparently much room for improvement in receipts if recovery in the heavy industries is to continue next year. London Transport "C" stock was inclined to show further improvement, buyers being attracted by the apparently satisfactory yield offered.

Argentine railway stocks have come in for increasing attention in view of the upward movement in the price of wheat and other factors which suggest that improvement of economic conditions in the

Argentine is likely to be accelerated in 1937. Considerable interest attached to B.A. Great Southern 5 per cent. preference, which has risen in the week from 67 to 75 on the belief that there are reasonable possibilities of the full dividend on this stock being earned for 1936-37. The 6 per cent. preference also rose and the ordinary stock is 30½, compared with 26½ a week ago. Central Argentine preference stocks and debentures have also moved up sharply, and the ordinary stock is 31½, a gain of 5 points on the week. B.A. Pacific ordinary shows improvement from 12½ to 16½, and the debentures were favoured on the view that they appear to be relatively undervalued, bearing in mind the valuable arrears of interest carried. Buenos Ayres Western and Entre Rios ordinary stocks participated in the upward movement. Canadian Pacific preference and debenture stocks were steady.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1935-36	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1935		Totals		Increase or Decrease		Highest 1935	Lowest 1935	Dec. 16, 1936	Yield (See Note)			
						This Year	Last Year									
South Central America.	Antofagasta (Chili) & Bolivia	834	13.12.36	15,730	+	£ 420	50	£ 700,030	630,820	+	£ 69,210	Ord. Stk.	23	1415½	24	Nil
	Argentine North Eastern	753	12.12.36	8,091	+	958	24	224,075	196,017	+	28,058	A. Deb.	491½	30	571½	615½
	Argentine Transandine	—	—	—	—	—	—	—	—	—	—	6 p.c. Deb.	13	5	71½	Nil
	Bolivar	174	Nov., 1936	5,000	—	1,000	48	68,600	66,600	+	2,000	Bonds.	14	11	16	3
	Brazil	—	—	—	—	5,063	24	1,825,601	1,781,123	+	44,478	Ord. Stk.	101½	47½	261½	Nil
	Buenos Ayres & Pacific	2,806	12.12.36	87,672	+	5,063	24	1,825,601	1,781,123	+	44,478	Mt. Deb.	21	10	28½	Nil
	Buenos Ayres Central	190	28.11.36	\$163,400	+	\$46,100	22	\$3,157,500	2,712,600	+	\$444,900	Ord. Stk.	27	131½	30	Nil
	Buenos Ayres Gt. Southern	5,084	12.12.36	129,324	—	2,110	24	2,716,520	2,851,489	—	134,969	Ord. Stk.	27	131½	30	Nil
	Buenos Ayres Western	1,930	12.12.36	44,704	—	8,057	24	992,759	974,122	+	18,637	"	24	10	28	Nil
	Central Argentine	3,700	12.12.36	148,054	+	31,670	24	3,308,337	2,795,498	+	512,849	"	177½	7	31	Nil
	Do.	—	—	—	—	—	—	—	—	—	—	Dfd.	0	31½	18	Nil
	Cent. Uruguay of M. Video	273	5.12.36	15,244	+	1,340	23	274,801	227,498	+	47,303	Ord. Stk.	81½	3	61½	Nil
	Do. Eastern Extn.	311	5.12.36	2,832	+	516	23	45,005	37,052	+	7,953	"	—	—	—	—
	Do. Northern Extn.	185	5.12.36	1,672	+	161	23	32,156	26,906	+	5,250	"	—	—	—	—
	Do. Western Extn.	211	5.12.36	1,063	+	94	23	22,763	17,798	+	4,965	"	—	—	—	—
	Cordoba Central	1,218	12.12.36	32,850	+	8,000	24	776,040	732,680	+	43,360	Ord. Inc.	4	1	31½	Nil
	Costa Rica	188	Oct., 1936	19,226	+	7,592	18	71,989	55,349	+	16,640	Stk.	35	30	36	59½
	Dorada	70	Oct., 1936	15,100	+	3,200	44	141,700	117,400	+	24,300	1 Mt. Db.	1035½	102½	104½	5½
	Entre Rios	810	12.12.36	11,724	+	819	24	304,819	276,220	+	28,599	Ord. Sh.	15	61½	15	Nil
	Great Western of Brazil	1,082	12.12.36	13,100	—	700	50	403,600	394,300	+	9,300	Ord. Sh.	12	51½	3½	Nil
	International of Cl. Amer.	794	Oct., 1936	\$294,126	—	\$591	44	\$4,223,770	\$3,843,882	+	\$379,888	1st Pref.	12	52½	12	Nil
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	—	—	Sik.	81½	8	71½	Nil
	La Guaira & Caracas	22½	Nov., 1936	4,625	+	1,365	48	50,475	41,145	+	9,330	Ord. Stk.	81½	212	61½	Nil
	Leopoldina	1,918	12.12.36	20,445	+	3,711	50	988,978	895,764	+	93,214	"	112	14	12	Nil
Mexican	483	7.12.36	\$299,100	+	\$56,700	23	\$6,096,800	\$5,701,000	+	\$395,800	"	112	14	12	Nil	
Midland of Uruguay	319	Nov., 1936	8,878	+	453	22	41,109	31,364	+	9,745	"	112	11½	12	Nil	
Nitrate	397	30.11.36	1,639	—	7,145	48	109,544	139,621	—	30,077	Ord. Sh.	64½	42½	21½	Nil	
Paraguay Central	274	12.12.36	\$3,377,000	+	\$977,000	24	\$60,913,000	\$53,869,000	+	\$7,214,000	Pr. Li. Stk.	801½	60	84	7½	
Peruvian Corporation	1,059	Nov., 1936	70,222	—	5,903	22	409,273	375,790	—	33,483	Pref.	105½	67½	10	Nil	
Salvador	100	5.12.36	£20,000	+	£300	23	£272,308	£283,546	—	£11,238	Pr. Li. Db.	65	61	15	Nil	
San Paulo	153½	6.12.36	32,131	+	3,050	49	1,440,657	1,201,329	+	239,328	Ord. Stk.	80	35	83	3	
Taltal	164	Nov. 1936	4,890	+	385	22	16,810	16,445	+	165	Ord. Sh.	111½	11½	11½	87½	
United of Havana	1,353	12.12.36	18,004	+	4,945	24	369,738	369,229	+	509	Ord. Stk.	31½	1	21½	Nil	
Uruguay Northern	73	Nov., 1936	1,268	+	131	22	5,031	3,715	+	1,316	Deb. Stk.	412	216½	51½	Nil	
Canada.	Canadian National	23,613	7.12.36	724,607	+	36,034	49	34,601,860	32,330,533	+	2,271,327	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	—	—	Perp. Dbs.	785½	521½	741½	5½
	Grand Trunk	—	—	—	—	—	—	—	—	—	—	4 p.c. Gar.	1035½	93	102½	37½
India.	Canadian Pacific	17,220	7.12.36	561,200	+	2,600	49	25,823,200	24,178,200	+	1,645,000	Ord. Stk.	141½	8½	14	Nil
	Assam Bengal	1,329	10.11.36	42,472	+	3,100	32	777,950	748,809	+	29,141	Ord. Stk.	921½	771½	851½	21½
	Barsi Light	202	20.11.36	2,430	+	2,452	34	70,757	89,557	—	18,982	Ord. Sh.	105	77½	661½	7½
	Bengal & North Western	2,107	30.11.36	82,333	+	5,640	35	442,752	413,519	+	29,233	Ord. Stk.	301½	291	309	8½
	Bengal Doonars & Extension	161	30.11.36	3,823	—	491	35	52,719	95,254	—	5,835	"	127½	122	119½	57½
	Bengal-Nagpur	3,268	30.11.36	167,100	—	19,523	35	3,958,799	4,238,404	—	279,605	"	105	100½	101½	31½
	Bombay, Baroda & Cl. India	3,072	10.12.36	270,900	+	35,775	36	5,653,575	5,471,325	+	182,250	"	115½	110	110½	57½
	Madras & Southern Mahratta	3,229	20.11.36	132,459	—	3,790	34	3,379,088	3,399,016	—	10,928	"	128½	113½	110½	8½
	Rohilkund & Kumaon	572	20.11.36	10,633	—	491	34	57,637	56,757	+	880	"	294	262	303	51½
	South Indian	2,532	20.11.36	94,709	+	3,266	34	2,573,264	2,552,263	+	21,001	"	1195½	104½	101½	57½
Various.	Beira-Untali	204	Sept., 1936	84,059	+	24,448	52	803,277	769,888	+	33,389	—	—	—	—	—
	Bilbao River & Cantabrian	15	Oct., 1936	977	+	718	44	14,608	15,053	—	445	—	—	—	—	—
	Egyptian Delta	620	30.11.36	7,849	—	2,061	35	165,927	164,461	+	1,466	Prf. Sh.	2	15½	15½	61½
	Great Southern of Spain	104	29.8.36	568	—	2,514	35	33,629	62,623	—	28,994	Inc. Deb.	31½	2	31½	Nil
	Kenya & Uganda	1,625	Oct., 1936	181,657	—	11,959	44	2,129,052	2,003,110	+	125,942	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	—	—	B. Deb.	48	36	46½	7½
	Mashonaland	913	Sept., 1936	120,223	+	13,530	52	1,352,141	1,384,055	—	131,914	1 Mt. Db.	104½	100	103	47½
	Midland of W. Australia	277	Oct., 1936	17,220	—	160	18	54,055	54,263	—	208	Inc. Deb.	98½	93	94½	4½
	Nigerian	1,905	31.10.36	74,329	+	12,997	31	1,014,568	894,490	+	210,078	—	—	—	—	—
	Rhodesia	1,538	Sept., 1936	215,585	—	22,258	52	2,291,219	2,320,250	—	29,031	4 p.c. Db.	105½	101	104½	31½
	South Africa	13,263	21.11.36	618,654	—	400	33	20,610,340	18,886,800	+	1,623,440	—	—	—	—	—
	Victoria	4,728	July, 1936	713,074	—	315	4	713,074	713,389	—	315	—	—	—	—	—
	Zafra & Huelva	112	Oct., 1936	14,665	+	1,978	44	80,613	114,122	—	33,509	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1%.

† Receipts are calculated @ 1s. 6d. to the rupee. ‡ ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value.